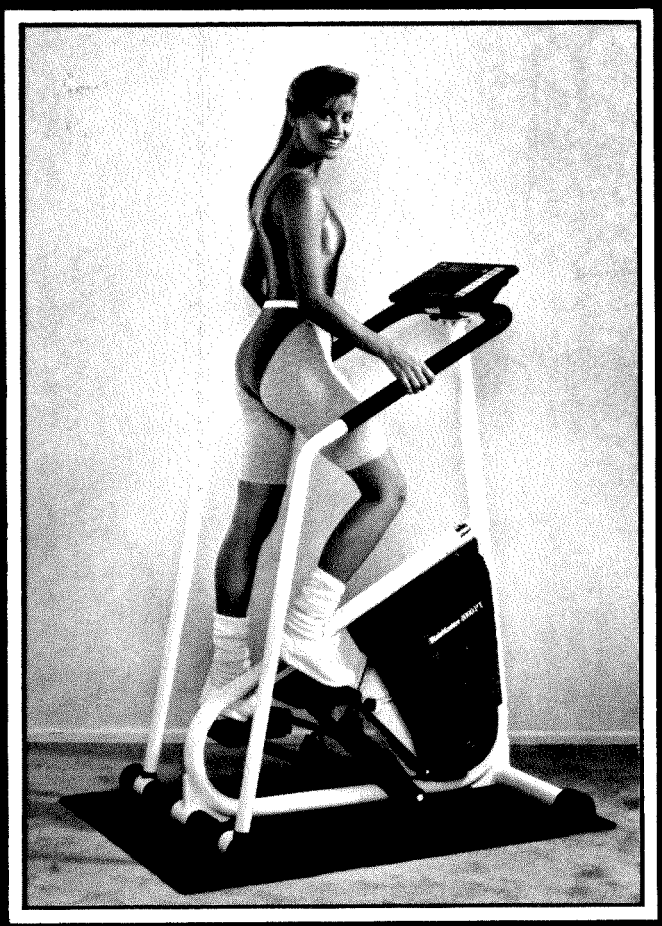
OWNER'S MANUAL

StairMaster 4000 PT

EXERCISE SYSTEM



WARRANTY INFORMATION

This is to certify that the StairMaster® 4000 PT® Exercise System is warranted by StairMaster Sports/Medical Products Inc. to be free of all defects in materials and workmanship. This warranty does not apply to any defect caused by negligence, misuse, accident, alteration or improper maintenance. This warranty is non-transferable from the original owner.

If, within one year from date of purchase, the StairMaster® 4000 PT Exercise System should prove defective, contact our customer service headquarters and report the defective part; be prepared to tell us your date of purchase and the frame serial number. A purchase receipt or other proof of the date of the original purchase will be required before any warranty parts are sent. We will send you a replacement part and you will send us the defective part. Upon receipt of the defective part, we will inspect it and determine the cause of the defect. Shipping charges are paid by the customer after 45 days.

We neither assume nor authorize any representative or other person to assume for us any other warranties in connection with the sale or shipment of our products.

We reserve the right to make changes and improvements in our products without incurring any obligation to similarly alter products previously purchased.

To maintain product warranties and to assure the safe and efficient operation of your 4000 PT exercise system, only use genuine StairMaster accessories and replacement parts.

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StairMaster® 4000 PT®

U.S. PATENT NO. 4,708,338

EXERCISE SYSTEM

Owner's Instruction Manual
including Instructions for Users

Console Serial Number _____ Rev _____

Frame Serial Number _____

Power Supply Serial Number _____

Date of Purchase _____

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INTRODUCTION

The StairMaster 4000 PT Exercise System is a highly effective tool for developing aerobic fitness. Designed for use by individuals of all ages and fitness levels, it provides a clinically-proven means for achieving aerobic fitness without the impact stress associated with most other forms of aerobic exercise. Your purchase is a positive affirmation of your commitment to use the best available exercise method to develop a high level of physical fitness. In order to attain the most from your StairMaster 4000 PT Exercise System, read this manual thoroughly and adhere closely to the instructions.

WHAT IS IN THIS MANUAL?

Following the installation information and a brief explanation of how the 4000 PT exercise system works, this manual contains two major sections. The first, "How to Use the StairMaster 4000 PT exercise system," provides an explanation of how the machine should be used to achieve maximum results. The second, "How to Maintain the StairMaster 4000 PT exercise system," includes instructions and advice on how to properly maintain your machine. There is also a special "Appendix" section which offers additional information for the owner.

WHAT IS THE STAIRMASTER 4000 PT EXERCISE SYSTEM?

The StairMaster 4000 PT exercise system is a vertical climbing machine which provides an aerobic workout equivalent to climbing stairs, without the inertial loads and skeletal trauma common to most aerobic activities.

The 4000 PT exercise system is computer controlled to offer automated, timed workouts from 5 to 45 minutes as selected by the user. There is a choice of eight preprogrammed workouts, each with ten levels of intensity. In addition, there is also a non-programmed (manual) workout which allows you to pace yourself or experiment with the various speeds. Also users have the option of designing up to ten "customized" workouts that can be created and stored in the computer.

All of the workout programs on the StairMaster 4000 PT exercise system feature computer-controlled speeds from 26 steps/minute to 138 steps/minute, based on 8-inch steps. The faster the speed, the greater the intensity level at which you are working. At the conclusion of your completed workout, the computer console displays the number of calories you burned while exercising, the equivalent number of floors you climbed, and the equivalent number of miles that

you covered. If your machine has Revision 2.1 or 2.2 software, you can request this information and also request elapsed time, KGMs, and watts at any time during your workout and then return to the standard workout display.

The 4000 PT exercise system strengthens and conditions the heart and the following lower body muscle groups: Erectus Spinae Group, Gluteus Medius, Gluteus Maximus, Tensor, Fascia Latae, Iliopsoas, Hip Abductors, Hip Adductors, Quadricep Group, Hamstring Group Gastrocneumius, and Soleus.

HOW TO INSTALL THE STAIRMASTER 4000 PT EXERCISE SYSTEM

Before leaving the factory, your StairMaster 4000 PT Exercise System was thoroughly inspected and tested for proper operation. To minimize shipping damage, careful attention was given to making your machine ready for shipment. Each computer console is packed with an anti-static ziplock bag to protect the console during shipping. The power supply unit and DC cable are shrink-wrapped and are either boxed or attached to the pedals of the machine.

1. Remove and discard the cardboard protector attached to the frame.
2. Remove and discard the box that protects the power supply and the DC cable.
3. Disconnect the grey cable and remove the two knobs below the electronic console that hold it to the handrail. Remove and discard the ziplock bag.
4. Mount the electronic console back onto the handrail and attach the grey cable end to the connector on the bottom of the console.
5. Place the StairMaster 4000 PT Exercise System at its intended location; this must be near a source of AC power.
6. Connect the DC power cable from the power connector near the bottom of the right side panel to the DC output connector on the power supply.
7. Plug the AC power cord into the power supply until you feel it snap into place.
8. Place the power supply on a floor surface near the AC outlet that you will use. StairMaster recommends that you place a mat under your 4000 PT Exercise System and place the power supply on the mat.
9. Check to be sure that the input AC power rating marked on the power supply matches the available power. If it does not, obtain the matching power supply from StairMaster before proceeding any further.

WARNING

USE ONLY THE PROPER POWER SUPPLY; ANY OTHER CAN CAUSE SEVERE DAMAGE AND CREATE A POSSIBLE FIRE HAZARD.

10. Connect the power supply to the AC outlet.
11. Observe the electronic console. It should provide an audible sound and there should be a simulated EKG in the display. If either indication is not present, turn off the power and then restore it. To remove power, you can use the switch on the power supply, disconnect the power supply from the AC outlet, or press the power supply RESET switch and hold it for at least one second. If the sound and/or the display are still not present, see the Troubleshooting Guide starting on page 30.
12. When the console displays a simulated EKG, your StairMaster 4000 PT Exercise System is fully operational.

The specifications for a fully assembled StairMaster 4000 PT Exercise System are listed in Table 1. The power supply provides 9 to 15 VDC at 2.5 amps to power the console. The low voltage eliminates the danger of electrical shock as long as the power supply is located away from the machine and is not exposed to perspiration. You should not place your power supply unit on a carpet because the power supply may overheat. Custom-length DC cables, brackets for multiple power supplies, and other accessories are available.

TABLE 1 SPECIFICATIONS

Physical:	
Length	40.5 inches (103 cm)
Width	32 inches (81.3 cm)
Height	58.5 inches (148.6 cm)
Weight	150 pounds (68 kg)
Power Supply Characteristics:	
Output Voltage (with load, console connected)	9 to 15 VDC
Output Voltage (no load)	14 to 17 VDC
Output Current Capacity	2.5 amps
Input Power Consumption	55 watts

HOW THE STAIRMASTER 4000 PT EXERCISE SYSTEM WORKS

The StairMaster 4000 PT Exercise System operates on the basis of kinetic energy. The work performed by the user (kinetic energy) drives an alternator that generates the physical resistance against step movement. No motors are involved. The power supplied to the unit is necessary only for the electronic console.

When you exercise, your body weight provides the kinetic energy needed to control speed and overcome resistance. This is achieved by a chain drive system that sums the vertical motion of the steps into a continuous rotary motion. The rotary motion drives a gearbox that drives an alternator at a sufficient RPM to provide a smooth, reliable means of exercise control. The computer in the console measures the AC frequency, (which is dependent on RPM) from the alternator. The computer electronics convert the AC frequency into the equivalent vertical climbing rate at which the user would be climbing if his/her steps were eight-inches per step.

The computer also compares the user's step rate to the programmed rate during the active interval and generates an appropriate field current for the alternator. This small field current determines the amount of physical resistance provided by the alternator, and this is the resistance that is fed back through the chain linkage to the pedal/steps.

The alternator circuits include a DC output that needs an external load for normal operation. In this machine, a large resistor is connected as the DC load and converts the output current to heat, which is easily dissipated.

GUIDELINES FOR SAFE OPERATION

Your StairMaster 4000 PT Exercise System is a carefully engineered tool that will provide a physical workout program tailored to your particular requirements. We hope that you will use it wisely and obtain all of the benefits it can offer you.

To maximize the results you can achieve and minimize the possibility of injury, always adhere closely to the following guidelines. If you compromise any of these guidelines, you compromise the effectiveness of the exercise experience, expose yourself (and possibly others) to injury, and reduce the longevity of your StairMaster 4000 PT Exercise System.

Suggestion: These guidelines are directed to you, as the owner of the machine. You should insist on instructing all users so that they will follow the same guidelines.

1. Obtain a complete physical examination from your medical doctor and enlist a health/fitness professional's aid in developing an exercise program suitable for your current health status.
2. When working out for the first time, exercise at the lower speeds until you feel comfortable and capable of faster speeds.
3. Speed and duration of exercise should always be subject to how a person feels. Apparent heart rate or any other external influence should never override your judgment when exercising.

4. Overweight people working out for the first time should proceed cautiously. Even though an overweight individual may not have a history of a serious physical problem, the individual may perceive the exercise to be far less intense than it really is, resulting in overexertion.
5. Although all equipment manufactured by StairMaster Sports/Medical Products, Inc. has been thoroughly inspected prior to shipment, proper installation and regular maintenance are required for safety. Maintenance is the sole responsibility of the owner.
6. StairMaster Sports/Medical Products, Inc. does not recommend user servicing of the electronic components in the console. They have been designed to be free of adjustments and do not require any maintenance. Opening the console or power supply will void the warranty.

IMPORTANT SAFETY INSTRUCTIONS

When using any electrical equipment, basic precautions should always be followed. Listed below are several of these safety precautions.

1. Read all instructions before using the StairMaster 4000 PT exercise system.
2. DANGER – To reduce the risk of electric shock:
   a. Always unplug the machine from the electrical outlet before cleaning, performing maintenance, or making repairs.
3. WARNING – To reduce the risk of burns, fire, electric shock, or injury to persons:
   a. The 4000 PT exercise system should always be unplugged from the outlet before putting on or taking off parts. Never attempt any adjustments or repairs while an exercise program is in progress.
   b. Close supervision is necessary when the 4000 PT exercise system is used by, or near children, invalids, or disabled persons. Keep children away from the pedal arm assembly (or other similar moving parts). Serious injury could result from an infant's or a small child's fascination with the moving components of the exercise machine.
   c. Keep your hands away from all moving parts and keep your feet in the center of the pedal/steps. Do not operate with side panels removed.

   d. Use the 4000 PT exercise system only for its intended use as described in this manual. Do not use attachments not recommended by the manufacturer.
   e. Never operate the 4000 PT exercise system if it has a damaged cord or plug, if the power is not applied, if the computer or machine does not appear to be operating properly, if it has been dropped or damaged, or if the power supply has been dropped into water. Call Product Support at 1-800-331-3578 to arrange for damaged parts to be returned to our factory for examination and repair. Do not attempt to use the equipment until all faults have been corrected.
   f. Connect the power supply to a properly grounded outlet only. See Grounding Instruction (page 42).
   g. Keep the power supply cord and DC cable away from heated surfaces.
   h. Never drop or insert any object into any opening.
   i. Do not use outdoors.
   j. Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
   k. To disconnect, turn all controls to the off position, then remove plug from outlet.

SAVE THESE INSTRUCTIONS

HOW TO EXERCISE ON THE STAIRMASTER 4000 PT EXERCISE SYSTEM

WARNING

IF AT ANY TIME DURING YOUR WORKOUT YOU FEEL PAIN OR FEEL FAINT OR ARE SHORT OF BREATH, STOP EXERCISING IMMEDIATELY.

Before exercising on the StairMaster 4000 PT Exercise System, you should verify that power is available to the machine by observing the display area on the computer console; it should have either a simulated EKG or a scrolling message. Having confirmed that the power is on, you are now ready to exercise. Follow the steps in this list to ensure that you achieve maximum results from your workout.

1. Warm-up (by doing light calisthenics and stretching) for at least five minutes prior to exercising.
2. Grasp the handrails and step up onto the pedals. Stand erect. The pedals will sink slowly and settle to the bottom.
3. The message "ENTER WEIGHT" with an arrow pointing to the numeric key pad will appear. Enter your weight (in pounds, or, if you have a Metric Console, in kilograms) on the key pad and press the ENTER key after you have verified that the numbers which are displayed are correct. Entry errors may be erased by simply pressing the CLEAR key.
4. Next the screen will display the message "SELECT PROGRAM" with an arrow pointing to the top three rows of the key pad. Select your program.
5. If you are working out for the first time, we recommend that you select MANUAL CONTROL in order to familiarize yourself with the machine. The computer will automatically select the slowest speed for the first interval and you can then change intensity levels during operation.
   (1) When you press MANUAL CONTROL and you have Rev. 2.1 or 2.2 console, the machine will ask you for the time of your workout in minutes; press 15 and ENTER to select a 15-minute workout with 30 seconds for each interval. For any other revision level, the computer will use the workout time that has already been entered and each segment will have a duration of 1/30 of the total time. (See page 12 for instructions to change to total workout time.)
   (2) The display will alternate between "Start Exercise" and the total time for the workout; this is your instruction to start exercising. If you do not exercise within 30 seconds, the console will return to the Attract mode.

   (3) When you begin to exercise, the console will display a flashing light at the lowest level in the first interval. You are stepping at a pace of 26 eight-inch steps per minute. As you become comfortable, you should try using the SPEED UP and SLOW DOWN arrows to adjust your speed. (Except for Rev. 2.1 and 2.2, Manual Control is the only program which allows speed changes with the arrow keys.) The flashing column shows which interval is active. Everything to the left indicates completed intervals. The interval timer shows how many seconds remain in the current interval. After completing an entire workout, you should have developed a feel for your abilities on the StairMaster 4000 PT Exercise System.
6. If you selected any of the eight workout programs other than Manual at the upper right of the console, the computer will next display the message, "ENTER LEVEL." Enter the Intensity Level (1 for easiest to 10 for most difficult) at which you will work out and press ENTER.
   (1) If you have a Rev. 2.1 or 2.2 console, the machine will ask you for the time of your workout in minutes; press 15 and ENTER to select a 15-minute workout with 30 seconds for each interval. For any other revision level, the computer will use the workout time that has already been entered and each segment will have a duration of 1/30 of the total time. (See page 12 to change the time of your workout.)
   (2) The display alternates between "Start Exercise," the total time for the workout and the workout contour; this is your instruction to start to exercise. If you do not start to exercise within 30 seconds, the console will return to the Attract mode.
   (3) As soon as you start to climb, the column of lights for the first interval will flash. The Interval Timer at the top of the console counts down in seconds. When it is near zero, a signal sounds to alert the user that the next interval is about to start.
7. When climbing, adhere closely to the following proper climbing techniques:
   (1) The pedal/steps should not be allowed to contact the floor except at the beginning or the end of the workout or during a rest period. Climb fast enough to stay in the middle of the range of motion for the pedal/steps. Step heights can range from 2 to 14 inches. If you are sinking toward the bottom, increase your climbing speed to get the height of your step back into the mid-range area.
   (2) The pedal/steps should not be allowed to contact the upper stop since this will cause your foot to lift off the pedal/step, resulting

in a jerky and uncomfortable motion while you exercise. Slow your step rate to operate the pedal/steps near the center of their range.

(3) Never lean on the console or the rails. Leaning on the console can damage the machine and result in possible user injury. The handrails are intended to stabilize users, not to support them. Individuals who are exercising on the StairMaster 4000 PT Exercise System for the first time should be particularly aware of these procedures because they often have a tendency to support their weight on the handrails instead of keeping up with the machine.

(4) Do not pull on the handrails. Pulling on the handrails will increase the amount of work you do, resulting in a calorie count lower than the actual work performed, and can cause premature wear of the components.

(5) Do not push on the handrails. Pushing on the handrails will cause the calorie count to indicate higher than the actual level of calorie expenditure.

(6) Relax as much as possible while climbing. Stand up straight and let your arms hang naturally (if possible).

8. After learning to climb comfortably, you can experiment with the steps by adjusting your step height from short, fast steps to long, deep steps. Also, you may want to try different rhythms, such as jogging at higher speeds. You may take a free-style approach to exercising as long as you adhere to the basic rules.
9. The 4000 PT Exercise System does not permit you to "cheat." Either you stay up with the speed of the program you selected or you will sink toward the floor. You can stop once and rest for up to two minutes at any time during the workout, but the program terminates if you rest more than two minutes or if you stop a second time. If the program terminates and you wish to continue exercising, you must start a new program. To rest, simply stop climbing and both pedal/steps will sink to the floor. To start after a rest period, simply raise either foot and start to climb again.
10. Monitor the interval timer to be forewarned of upcoming sudden speed changes in the program you are following. Changes are shown by a taller or shorter column of lights for the next interval.
11. To dismount, stand still and allow the pedal/steps to settle to the floor. Lift one foot slowly until the step arm contacts the upper stop. Place that foot on the floor. Repeat for the other foot. Do not let the pedal/steps slam into the stop, since this may cause unnecessary wear and tear.

12. When you have completed the last interval of the exercise bout, the console will display a summary of your workout. Then step off the machine and cool down by walking or stretching for five minutes before showering.

HOW TO USE THE COMPUTER CONSOLE

The purpose of the computer console is to provide an "automated" workout and a "friendly" method for obtaining necessary data and displaying workout results.

Before your initial workout on the StairMaster 4000 PT Exercise System, it is valuable for you to become familiar with the computer console and its operation. The console has three areas that provide the user with an interface to the system:

— the keypad which allows data entry and program selection;
— the display area which provides information to the user either by charting workout progress or by providing written questions and statements;
— and the interval timer which displays the time remaining in the current exercise interval.

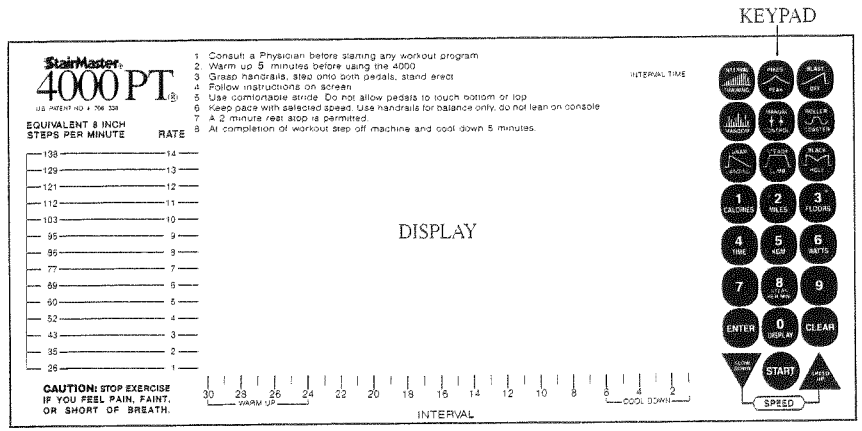


Figure 1. The StairMaster 4000 PT Console

THE OPERATIONAL MODES

1. THE ATTRACT MODE. The Attract mode is the machine's idle time and is characterized in the display area by either the simulated EKG or a scrolling message. Pressing the START button from any other mode will return the computer to the Attract mode.

2. THE DATA ENTRY MODE. In the Data Entry mode, the user must furnish information the computer needs to control the speed of the workout and to accurately calculate the physiological and performance feedback. This mode is entered only from the Attract mode by pressing START or by stepping on one of the pedal/steps. The first prompt on the screen is ENTER WEIGHT. To respond, simply press the appropriate numbers on the keypad and then press ENTER. The range for weight is any number from 1 to 999 pounds (or, for the metric console, 1 to 999 kilograms). Your weight is used to calculate the number of calories you used while exercising. The next prompt is SELECT PROGRAM. You have the choice of exercise programs in the top three rows of the keypad (see Figure 1). The outlines on the keys correspond to the relative profile of the particular program. If you select MANUAL CONTROL or one of the custom programs, the computer has completed the data entry. If you have selected any of the other eight preprogrammed workouts, the console will prompt with ENTER LEVEL and wait for you to enter a difficulty level between 1 and 10, with 1 being the lowest workout intensity. If you have the Revision 2.1 or 2.2 software and you have selected MANUAL CONTROL or one of the preprogrammed workouts, the computer will ask for the length of your workout in minutes before completing the data entry.

3. THE EXERCISE MODE. The Exercise mode for the program always follows the Data Entry mode. The workout begins with a START EXERCISE prompt. This prompt will rotate through START EXERCISE, length of workout, and a graphic display of the workout (unless you have selected the Manual Control or a custom workout program). Once you start to move the pedal/steps, the prompt disappears and the workout profile/contour is displayed. The workout is divided into 30 intervals, each lasting 30 seconds (assuming a 15-minute workout; they always represent $^1/_{30}$th of the actual total time). The flashing column is the current interval and the interval timer shows the number of seconds remaining in that interval. The workout level is represented by the height of the column of dots (example, 5 dots high equals sixty 8-inch steps per minute). If you have the Revision 2.1 or 2.2 software, you can request summary data at any time during the workout by pressing the key marked with the parameter you wish to check (CALORIES, MILES, FLOORS, ELAPSED TIME, KGM, WATTS, or STEPS PER MINUTE). Then you can return to the normal display by pressing DISPLAY.

4. THE EXERCISE SUMMARY AND GOAL ATTAINED MODE. At the end of a completed exercise program, the Exercise Summary and Goal Attained mode is displayed automatically. The Summary displays in sequence the number of calories you expend while exercising, the number of equivalent floors you climbed, and the number of equivalent miles you covered. Each new display is accompanied by a ringing sound to alert you to the new display. For the 1.2, 1.3, 1.5, 2.1, and 2.2 versions of the console, if you desire a summary for a partially completed program, press START to select the Attract mode, and then press 109 and ENTER. The program will be interrupted, so if you desire to continue exercising you must start a new program.

Following the summary is a Goal Attained message or the jackpot display, depending on an owner-selected option.

If the jackpot option is in use, the computer then returns to the Attract mode.

If the jackpot option is in use, the message "YOU WIN," remains until START is pressed; then the programmed odds are shown. Press START one more time to return to the Attract mode.

CHANGING THE LENGTH OF YOUR WORKOUT

The standard workout time is 15 minutes for all except customized programs. The workout time is the sum of all 30 interval times shown on the workout display. Each column in a standard 15-minute workout represents a 30-second interval. Each interval time is adjusted to $^1/_{30}$th of the total time if a new time is selected. The workout length may be adjusted by using this option to change to any number of minutes between 5 and 45. *The new time remains in effect for all standard programs until it is modified again.* As a general rule, we recommend that you do not share this information on how to change the length of the workout time. Depending upon the situation, such information could easily be abused. Unless changes are otherwise needed, we recommend that all programs remain 15 minutes in length.

WORKOUT TIME (MINUTES)	INTERVAL TIME (SECONDS)
5	10
10	20
15	30
20	40
25	50
30	60
35	70
40	80
45	90

If you decide to change the time setting for a workout, follow these steps:

1. The computer must be in the Attract mode.
2. Press 1010 followed by ENTER.
3. Enter the desired time in minutes followed by ENTER.
4. The computer then returns to the Attract mode.

The next time you exercise, the interval time will reflect the revised time to perform a workout. This time-setting feature does not affect the length of any customized programs previously entered.

If you have the Revision 1.5, 2.1 or 2.2 software you can lock-in a maximum workout time. When the computer asks the user for the time of his/her workout, the user will be able to select any time that is equal to or less than the locked-in time. If the user requests a time that exceeds the locked-in time, the computer will request the time again. **Once you lock-in a time, the time can not be changed by anyone except a StairMaster authorized service technician.**

To lock-in a time, for Revision 2.1 software, follow these steps:

1. The computer must be in the Attract mode.
2. Press 1010 followed by ENTER.
3. Enter the desired time in minutes followed by ENTER.
4. The computer will return to the Attract mode.
5. Press 97405 followed by ENTER.
6. The computer will now be locked to the time you entered in step 3.

The procedure for time-locking Revision 1.5 and 2.2 software differs slightly from Revision 2.1. (The 107 enter 4 code will display the Revision level of your console.)

1. The computer must be in the Attract mode.
2. Press 1010 followed by ENTER.
3. Enter the desired time in minutes followed by ENTER.
4. The computer will return to the Attract mode.
5. Press 97405 followed by ENTER.
6. The computer will display the time you entered in step 3.
7. If the time displayed is NOT the time you want, press any key except ENTER and begin at step 1 again.
8. If the time displayed is the time you want, press ENTER.
9. The computer will now be locked to the time you entered in step 3.

We suggest that you lock-in the time you want when you receive the 4000 PT® Exercise System.

CUSTOMIZING YOUR EXERCISE PROGRAM

The StairMaster 4000 PT Exercise System offers you the capability of inputting user-designed workouts that can be retained in the computer's memory. After entering the code to access customized programs, the computer will prompt for a program number. There is room for ten customized programs.

This section of the manual presents instructions on both how to input custom-designed programs and how to use these programs once they have been entered. We recommend that individual users, other than the owner or operator, be permitted to know the codes to access the customized programs but not to know how to further modify the programs; this will prevent the users from tampering with these programs.

TO CUSTOM-PROGRAM A WORKOUT:

The computer must be in the Attract mode.

Press 1650 followed by ENTER. ENTER PROGRAM will appear on the display. Enter the number of the program you wish to modify. For a machine with the Rev. 1.5, 2.1 or 2.2 console, the program numbers are 0 through 9. For a machine with any lower Rev. level console, the program numbers are 1 through 10, and you must press ENTER after you have selected the number.

If you select a number that has previously been programmed, the program will appear and can be modified or completely rewritten. If the number you entered has not previously been programmed, when you press ENTER you will see a solid row of dots representing the lowest intensity level for all intervals.

The flashing dot or column indicates which interval can now be modified. Use the SPEED UP and SLOW DOWN arrows to make the column taller or shorter; use ENTER to move one column to the right and CLEAR to move one column to the left. When all of the columns are correctly programmed, press START to save the program.

ENTER TIME will appear on the display. Enter the desired time, between 1 to 45 minutes. Note that, unlike standard programs, customized programs allow the time to go down to one minute, and this allows only two seconds per interval.

Press ENTER. Your program has now been saved and the computer will return to the Attract mode.

TO USE A CUSTOMIZED PROGRAM:

For revisions prior to and including 1.3 press 4101 followed by ENTER. Enter the desired program number. The program number will be between 1 and 10. Press ENTER. You can only select a number that has been previously programmed. Otherwise the computer will ask you to reselect the program number.

For the Revision 1.5, 2.1 and 2.2 console, the custom programs are accessed by entering the program number (the number will be between 0 and 9) when the computer displays the message "SELECT PROGRAM." The custom programs cannot be accessed by pressing 4101.

Continue as with a standard exercise program.

THE SCROLLING MESSAGE OPTION

The scrolling message option permits you to replace the simulated EKG seen on the display during the Attract mode with a scrolling message which you enter into the computer. This message may involve special announcements, birthday greetings, specific messages, etc. This option is automatically inserted when a message is entered but then can be disabled without losing the message. The message can also be accompanied by an optional teletype sound effect.

Your first step is to identify what you want your message to say and to code your message using the codes for letters, numbers and symbols presented in Table 2. Each code has two digits. The computer will automatically accept and display the character after the second digit is pressed. Pressing ENTER after each number code is not necessary. If you make a mistake, press CLEAR to remove the last digit pressed. If you want to remove more characters from the display in reverse order, simply continue to press CLEAR. It is not necessary to leave a space at the beginning or the end of your message because the computer will do this automatically. Your message may contain up to 128 characters including spaces.

TABLE 2. CHARACTER CODES FOR SCROLLING MESSAGES

A = 50	N = 63	Space = 76	+ = 22
B = 51	O = 64	0 = 00	$ = 23
C = 52	P = 65	1 = 01	. = 24
D = 53	Q = 66	2 = 02	% = 25
E = 54	R = 67	3 = 03	? = 26
F = 55	S = 68	4 = 04	' = 27
G = 56	T = 69	5 = 05	" = 28
H = 57	U = 70	6 = 06	— = 29
I = 58	V = 71	7 = 07	# = 30
J = 59	W = 72	8 = 08	♥ = 31
K = 60	X = 73	9 = 09	: = 32
L = 61	Y = 74	! = 20	
M = 62	Z = 75	* = 21	

TO PROGRAM THE SCROLLING MESSAGE

The computer must be in the Attract mode.

Press 7607 followed by ENTER. You should verify each character of your message; it appears on the display as you enter it.

Sample message...EXERCISE CAN BE FUN:

Press 7607 followed by ENTER; then press the following numbers: 54 -73 - 54 - 67 - 52 - 58 - 68 - 54 - 76 - 52 - 50 - 63 - 76 - 51 - 54 - 76 - 55 - 70 - 63 - ENTER.

When your message is complete, press ENTER. Your message will now begin scrolling. The machine will have returned to the Attract mode.

TO EDIT THE SCROLLING MESSAGE

If you have the 1.5, 2.1 or 2.2 version, you can edit an existing message. Press 7607 and ENTER to bring the message onto the screen. Then use SPEED UP and SLOW DOWN arrows to scroll through the message. The CLEAR key deletes the right-most character on the screen. A new character is inserted in the right-most position. Enter 99 to erase all of the previous message to the right of the current display.

TO ACHIEVE OPTIONAL CONTROL OF THE SCROLLING MESSAGE

Press 40 followed by ENTER. This will turn on the teletype sound.

Press 41 followed by ENTER. This will turn off the teletype sound.

Press 2123 and ENTER. This turns your scrolling message off but retains the message in the computer's memory. The simulated EKG will then be displayed.

Press 2121 and ENTER. This turns your scrolling message on again.

To erase the entire message on revisions prior to and including 1.3, press 7607, ENTER, ENTER. The console display will be blank. Press 2123 and ENTER to turn the EKG symbol on again. To erase the message on 1.5, 2.1 and 2.2 versions, press 7607, press 99 to erase the message to the right of the display and then continue to press the CLEAR key to delete each remaining character in the message. Press ENTER. The console display will be blank. Press 2123 and ENTER to turn the EKG symbol on again.

THE JACKPOT OPTION

When you finish your workout, a Goal Attained message is normally displayed on the computer console. This message may be replaced by a Las Vegas-style slot machine. When the wheels of the slots stop turning, the window

will spell out either THE END or YOU WIN. The odds of winning may be programmed anywhere from 1-in-5 to 1-in-9,999. The computer will then randomly select a winner and display YOU WIN, instead of the usual THE END. After displaying YOU WIN, the computer will wait for the START button to be pressed and then display the current odds. This allows the owner to confirm there has been no tampering. The odds are modified by the computer to allow a lengthy workout to have the same win potential as several short workouts. The entered odds are based on the standard 15-minute workout.

Commercial owners often use the jackpot option to further stimulate consumer interest in their establishment and to add variety to their overall workout program. Many such owners offer a prize or some tangible incentive for individuals who win while using the jackpot option. If there is only one prize, you should remember to disable the option after there is a winner. The jackpot option remains in effect until disabled by entering zero odds. StairMaster assumes no liability stemming from the use of the jackpot option. The use of this option may also be governed by laws or ordinances in your area.

TO TURN THE JACKPOT OPTION ON OR OFF

Program odds of five or more turn the jackpot option on.

Program the odds to zero to turn the jackpot option off and to return to having the Goal Attained message appear after you finish your workout.

TO ENTER ODDS

The computer must be in the Attract mode.

Press 8089 followed by ENTER.

The prompt ENTER ODDS will appear on the screen. Enter the numeric odds you have selected, between 5 and 9999. Then press ENTER.

When the computer has a winner, the YOU WIN display will remain active until START is pressed. The current odds will display after START is pressed. This step gives the owner a chance to verify the win. Pressing START a second time will return the computer to the Attract mode.

OTHER JACKPOT CODES

Press 3121 followed by ENTER to display the current odds. Press START to return the computer to the Attract mode.

Press 8089 followed by ENTER, and then 0 and ENTER to disable the jackpot option.

CHANGING THE SOUND VOLUME

The sound volume is set at the factory but may be adjusted by the owner. To set the volume, use a small flat-blade screwdriver to adjust the volume control through the hole in the bottom of the console. Facing the bottom of the console, clockwise rotation increases the volume level while counter-clockwise rotation decreases the volume level.

CLEARING THE COMPUTER MEMORY

If you want to clear all data that has been entered into the computer memory, press 105 followed by ENTER. *Be advised that this procedure will also erase any customized programs and scrolling messages you may have entered into the memory.*

MAINTENANCE

HELPFUL HINTS

If you keep your StairMaster 4000 PT Exercise System serviced and in good condition, it will operate more efficiently and last longer. We recommend that you use the following service guidelines.

Additionally, only use genuine StairMaster accessories and replacement parts to maintain product warranties and to assure the safe and efficient operation of your equipment.

MAINTENANCE RECORDS

If you have the Revision 2.1 or 2.2 software, the computer will keep track of the following data on machine usage.

1. The number of hours the machine is on.
2. The number of hours the machine is in use.
3. The total number of floors climbed.

To access the data, press 7703 followed by ENTER when the computer is in the Attract mode. The computer will display the data in the sequence listed above. These numbers can only be reset by the factory.

Maintenance personnel should find this data helpful in designing preventative maintenance programs.

INITIAL SERVICE

We recommend that you wax your 4000 PT Exercise System as soon as you receive it. Apply a coat of good quality protective car wax to all white powder-coated metal surfaces. This will protect the finish and simplify cleaning.

CLEANING AND INSPECTING

1. DO NOT USE GLASS CLEANERS OR ANY OTHER HOUSEHOLD CLEANER ON THE CONSOLE. Use only a water-dampened cloth when you clean the electronic parts and wipe dry after cleaning.
2. Clean the exterior of your 4000 PT Exercise System daily using any common household cleaner such as *Fantastic, 409*, etc.
3. Thoroughly clean the entire 4000 PT Exercise System, including the interior, at least once a week.

4. Inspect for any rust, bubbling, or paint chips during your weekly cleaning. Salt contained in perspiration can affect the paint surface so that it requires a slight touch-up.
5. StairMaster has a special paint touch-up kit. If your machine needs a touch-up, obtain the kit and follow these steps:
   a. SURFACE PREPARATION. Sand the surface with a fine-grade sandpaper until smooth. Feather the edge until you have a smooth transition between the sanded and painted surfaces. Remove all rust or corrosion from the surface. The area to be painted must be clean and free of oil and grease. Mask any area that could receive overspray.

LEGEND FOR FIGURE 2

(Lubricate circled parts)

A = Console
B = Grey Cable
C = Load Resistor
D = Drive Chain
E = Transmission
F = Transmission Drive Sprocket
G = Step Chain Return Spring Connector
H = Clutch Sprocket
J = Drive Shaft Sprocket
K = Pedal/Step
L = Pedal Arm Assembly
M = Spring Pulley
N = Console Knob
P = Alternator Pulley
Q = Alternator
R = Alternator Adjuster Brace
S = Alternator Timing Belt
T = Transmission Pulley
U = Step Return Spring
V = Return Spring Hanger
W = Step Chain
X = Drive Shaft
Y = Shock Mount
Z = Step Leveling Arm

AA = Stud Assembly (3 per side)
BB = Handgrip
CC = Handrail
DD = Drive Plate
EE = Handrail Adapter
FF = Step Chain Connection

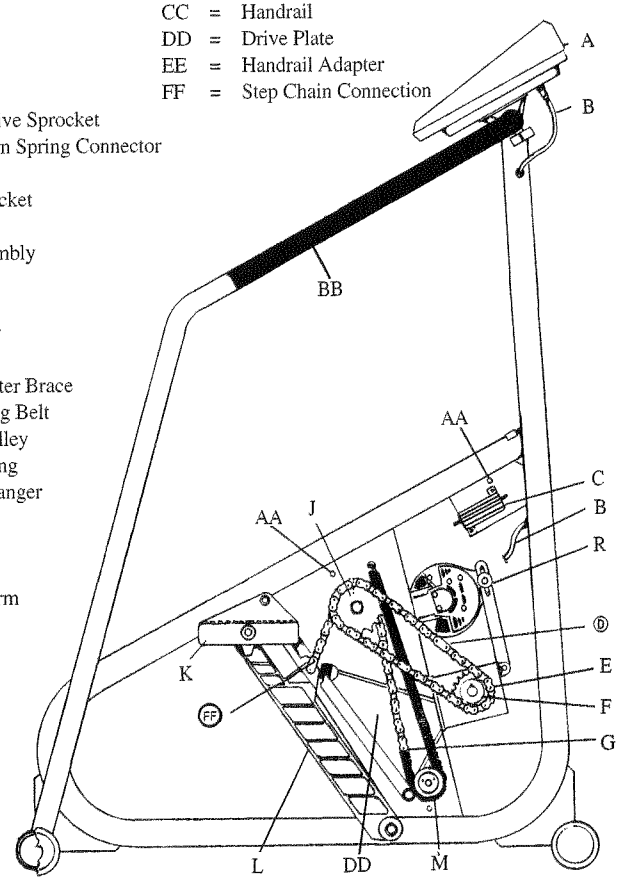


Figure 2. Parts Locations (Right side view, side panel removed)

b. If you are painting over base metal, spray on a metal primer before you use the touch-up paint.

c. PAINTING. Read and follow all directions on the StairMaster paint spray can; failure to do this will result in a poor overall finish. Hold the can 7 to 9 inches away from the surface and spray using a steady, even, back-and-forth motion. Use overlapping strokes to get a complete, light, uniform coat that looks glossy wet (rather than a heavy coat that might run or sag). If runs or sags are visible, repeat surface preparation as defined above and repeat the paint application. When applying more than one coat, allow at least 30 minutes drying time per coat.

4. FINISH PROTECTION. After 30 days of curing time for the new paint, apply a thin coat of good quality car wax to prolong the finish and give added protection from perspiration.

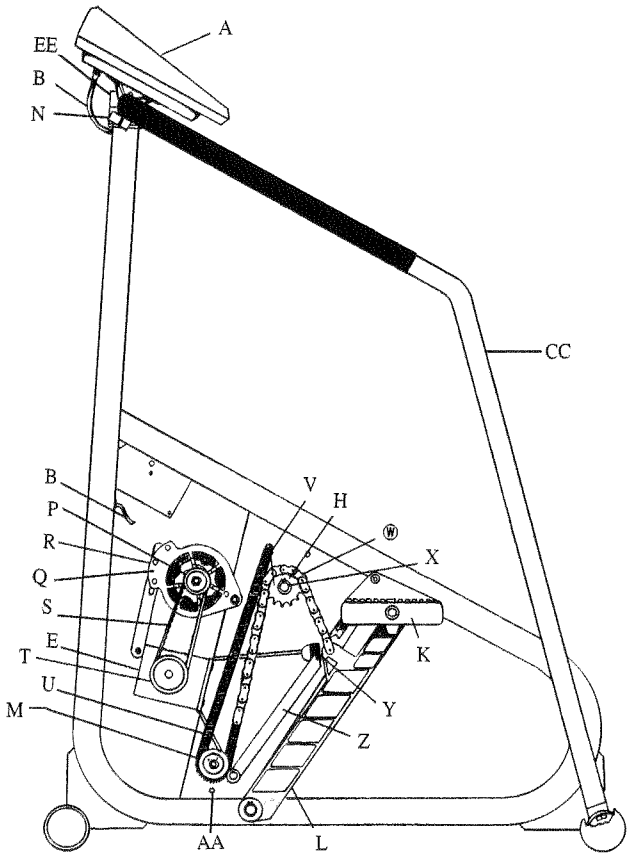


Figure 2. Parts Location (Left side view, side panel removed)

LUBRICATION

The StairMaster 4000 PT Exercise System has five components that require periodic lubrication. The callouts for these parts are circled in Figure 2 on pages 20 and 21. Table 3 on page 23 is a recommended lubrication and preventive maintenance schedule that assumes moderate to heavy usage in a commercial club environment. Following are some guidelines regarding proper lubrication procedures:

1. For a chain lubricant, use 30W motor oil or a lower unit gear lube for outboard motors that is made to operate in a salt water environment. If you use any oil, place a protective mat on the floor during the oiling process; you may wish to purchase a protective floor mat from StairMaster.
2. To clean the components listed below, use a mild degreaser to remove dirt and corrosion. Read the instructions on the degreaser container before using; some degreasers are harsh and can damage painted surfaces.
3. Clean and lubricate the step chains (W in Figure 2) once a week. Remove the chains to thoroughly clean and re-lubricate every three months. This schedule will minimize deterioration of the chain that may be caused by perspiration.
4. Clean and lubricate the drive chain (D in Figure 2) once a week. Remove the chain to thoroughly clean and relubricate every three months. Remove side panels for access.
5. Clean and lubricate both step chain connection points. (FF in Figure 2) every three months, or if a squeak develops in this area. (See Replacing the Bearings in the step chain connection for the procedure to access the bearings. It is not necessary to remove the bearings to relubricate them.) Lubricate the connection point bushings with a liberal amount of a multi-purpose grease. Then re-attach the step chains in the reverse order.
6. Lubricate the drive hub assembly (see Figure 3, page 28) every three months, or more frequently if necessary. If your hub has a Zerk fitting, add two or three squirts of heavy multi-purpose grease through the fitting. If your hub does not have this fitting, it is necessary to disassemble the hub to repack it with the grease (see Replacing the Drive Hub Assembly [page 36] for the procedure). Coat the thrust bearing in the drive hub assembly with a heavy multi-purpose grease. Do not lubricate the clutches in the sprockets.

WARNING

Be sure the step area is free of grease or oil and wipe any excess off machine surfaces.

WARNING

Never lubricate the bushings for the step arm (L in figure 2) or for the leveling arm (Z in figure 2). These are permanently lubricated and may fail if you add lubricants.

7. If you suspect that any of the permanently lubricated bushings has lost its oil impregnation, heat the bearing with a lighter or other similar heat source. Droplets of oil should appear on the bushing surface to show that it still has lubricant. If no oil appears on the heated surface, you may apply some light mineral oil to restore lubricant to the bushing.

TABLE 3. RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

	Weekly or 70 hours of use	3 Months or 900 hours of use
Step Chain	Clean & Lubricate	Remove, Clean & Relubricate
Drive Chain	Clean & Lubricate	Remove, Clean & Relubricate
Step Chain Connection Points	Clean & Lubricate	Clean & Relubricate
Pedal Arm Shafts		Clean Only
Leveling Arm Attachment Bolts		Clean Only
Spring Pulley Shafts		Clean Only
Pedal Shafts		Clean Only
Timing Belt		Inspect and Adjust
Hub Assembly & Thrust Washers		Lubricate

TROUBLESHOOTING GUIDELINES

The three primary components of the StairMaster 4000 PT Exercise System that may require troubleshooting are the console, the electrical system, and the power train. Several tests and guidelines that you can use are presented below. Also see the Troubleshooting Table (page 30) to help identify causes and remedies for various possible trouble symptoms.

TROUBLESHOOTING THE CONSOLE

NOTE: Perform all tests while the computer console is in the Attract Mode.

1. THE DISPLAY TEST: If you have blank spots on your console display, perform the display test. This checks for bad LEDs. If any LED will not light, replace the console.
   a. Press the SPEED UP arrow, then press 15 and ENTER.
   b. All LEDs in all 30 columns should be lit and the Interval Timer should read 88.
   c. The test will time out on its own or, if you wish, you can press the SLOW DOWN arrow to turn out the LEDs and the Interval Timer. Press the SPEED UP arrow to light the LEDs and the Interval Timer again.
   d. Press ENTER to terminate the display check.
2. THE KEYPAD TEST: Perform this test if you are unable to enter data into the console. If the keypad does not operate properly, replace the console.
   a. Press 107, followed by ENTER and 3.
   b. Press the console keys. If a light (a LED in the console display) blinks each time a key is pressed, the keypad is good. If there is no blink, the keypad is defective.
      1. Start at upper left corner of the keypad and press the first preprogrammed selection key. A light should go out while the key is pressed and then turn on again when the key is released.
      2. Repeat step 1 for each of the seven remaining preprogrammed selection keys and the MANUAL CONTROL key.
      3. Repeat step 1 for each of the number keys, 0 through 9.
      4. Repeat step 1 for the SPEED UP and SLOW DOWN arrow keys.
   c. Press START to clear the test.
3. THE REVISION LEVEL TEST: If you want to test the compatibility of your console with one on another machine, perform this revision level test.
   a. Press 107, followed by ENTER and 4.

The screen will display which revision identifies your console: Rev D, Rev E, Rev M, Rev 1.1, Rev 1.2, 1.3, 1.5, Rev 2.1 or 2.2. The Rev D console is not compatible with any of the later revisions because this 4000 PT Exercise System will have a Motorcraft alternator while all of the later revisions have either a Motorola (Prestolite) or a Bosch alternator. Rev E, Rev M, Rev 1.1, Rev 1.2, and Rev 1.3 are directly interchangeable.

b. Press START to clear the test.

If you have Revision 1.5, 2.1 or 2.2 software, the computer is compatible with all revisions. Use the codes listed below to make the computer compatible with your machine:

1. Rev. D - press 9751 followed by ENTER.
2. All other revisions - press 9750 followed by ENTER.

TROUBLESHOOTING THE ELECTRICAL SYSTEM

1. ELECTRICAL CIRCUIT TEST. If you have problems with the console going blank in the middle of a workout, have random dots in the display, or the console fails to prompt you to enter your weight, you need to test the electrical circuits in a systematic way. YOU MUST test the electrical circuits in precisely the same order as listed below in order to identify the problem. During these tests, when you disconnect a wire and find that the test shows that the circuit is ok, reconnect the wire before you proceed. This test requires the use of a volt-ohm meter.
   a. Disconnect the AC power cord from the back of the power supply and measure the AC voltage in the cord. It should be 105 to 125 volts AC.
   b. Disconnect the DC cable from the power supply and check the power supply output. A good power supply will have an output of 14 to 17 volts DC with no load.
   c. Disconnect the DC cable from the power connector. Check the DC cable output; the same DC voltage should be available at this end of the cable.
   d. Check the wiring connections from the power connector assembly to the grey cable. The white wire from the power connector is connected to the white wire in the grey cable that leads to the console. The black wire is connected to the alternator ground. The voltage at these connections should be 14 to 17 volts DC.
   e. Disconnect the 6-pin connector on the grey cable from the console. You should have between 14 and 17 volts DC between pins 4 and 5 (4 is positive, 5 is negative).
   f. Inspect the power connector and grey cable wires to locate and eliminate any pinching or crimping of the wires.

2. ALTERNATOR TESTS. Two alternator tests are also available that can be performed without using a voltmeter. If either test fails, this indicates either a broken circuit (broken wire, loose connection, or badly crimped wire) or a bad alternator.

ALTERNATOR CIRCUIT TEST #1:

   a. Press 107, followed by ENTER and 1.
   b. Press down on either pedal. The lower left LED should light in the panel, indicating a good circuit. If the LED fails to light, the circuit is defective. Check for a loose connection of the blue wire at the alternator.
   c. Press START to clear the test.

ALTERNATOR CIRCUIT TEST #2:

   a. Press 107, followed by ENTER and 2.
   b. Press down on either pedal and then press the SPEED UP arrow. You should get full resistance and the lower left LED should light again. If this does not happen, there is a break in the circuit. Check for a loose connection of the brown wire at the alternator.
   c. Press the SLOW DOWN arrow. The LED should turn off and there should be no resistance.

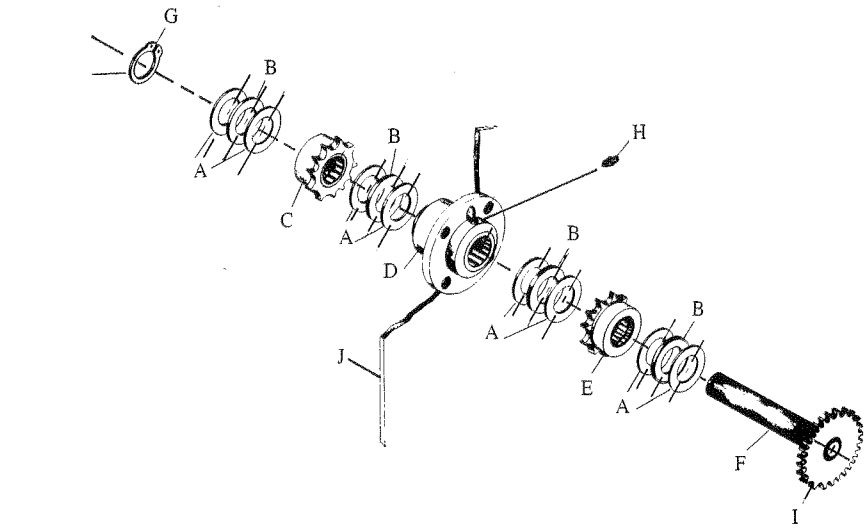
3. DIODE TEST. If you have problems with fluctuating speed control, test the diode on the alternator. See the wiring diagrams in the Appendix (pages 45 and 46).
   a. Disconnect the ground terminal side of the diode. Disconnect only the diode and not the black wire. If the speed control returns to normal, the diode is defective.
   b. If you have a multimeter, place the dial on the proper setting. Use the resistance setting (R x 1) if you are using an analog meter, or diode check (>+) if you are using a digital meter. Disconnect the brown wire and diode from the field terminal of the alternator. Connect the negative lead to the end of the diode with the white band and the positive (or COM) lead to the other end of the diode (forward bias). The meter should give a low reading. Then reverse the leads (reverse bias). The meter should give a high reading. High or low readings in both directions means the diode is defective.
4. LOAD RESISTOR TEST.
   a. See Figure 2, page 20, for location of the resistor.
   b. Disconnect one lead from the resistor to the alternator.
   c. Set your multimeter for R x 1 or the lowest available resistance range. Touch the two leads together and adjust the meter for a zero reading.
   d. Measure the resistance of the load resistor; a good resistor will measure approximately 0.7Ω.

TROUBLESHOOTING THE POWER TRAIN

If you are experiencing a grinding noise in your StairMaster 4000 PT Exercise System or if the pedal/steps are not functioning properly, you probably have a problem in the power train. You should attempt to isolate the area in which the problem is occurring; the alternator, the transmission, the drive hub assembly, the drive chain, or step chains. Perform these tests in precisely the order listed below.

1. Check the condition and tension of the alternator belt. Replace it if it is worn. Adjust the tension so that you can deflect either side of the belt 1/4 inch at the center between the alternator and transmission pulleys. Noise can be generated by a belt that is too tight or too loose.
2. Disconnect the alternator belt and work the pedal/steps. (With the alternator belt removed, there is normally little pedal resistance.) If the noise is no longer present, replace the alternator.
3. Remove the drive chain and then work the pedal/steps. (Again, there will be no resistance.) If the noise disappears, the problem is the transmission assembly; replace it.
4. If a grinding noise is still present, the problem is in the drive hub assembly, a binding in the shaft of one of the pedal/steps, or in the step chains.
   a. Check the drive hub assembly by inspecting the clutches in the drive sprockets and the bearings in the hub (see Figure 3, page 28). Inspect the drive shaft for signs of wear or scoring.
   b. Check the pedal arm shafts by removing the pedal arm from the pedal arm shaft and inspecting the shaft and bushing for wear and corrosion. Replace the bushing if it is worn. Clean any corrosion off the shaft and bushing before reassembling.
   c. Check the step chain by flexing each link. Clean and lubricate the chain.

A = Washer, Thrust
B = Bearing, Thrust
C = Drive Sprocket, L.H.
D = Hub
E = Drive Sprocket, R.H.
F = Drive Shaft
G = Snap Ring - 1"
H = Grease Fitting
I = Drive Shaft Sprocket
J = Drive Plate



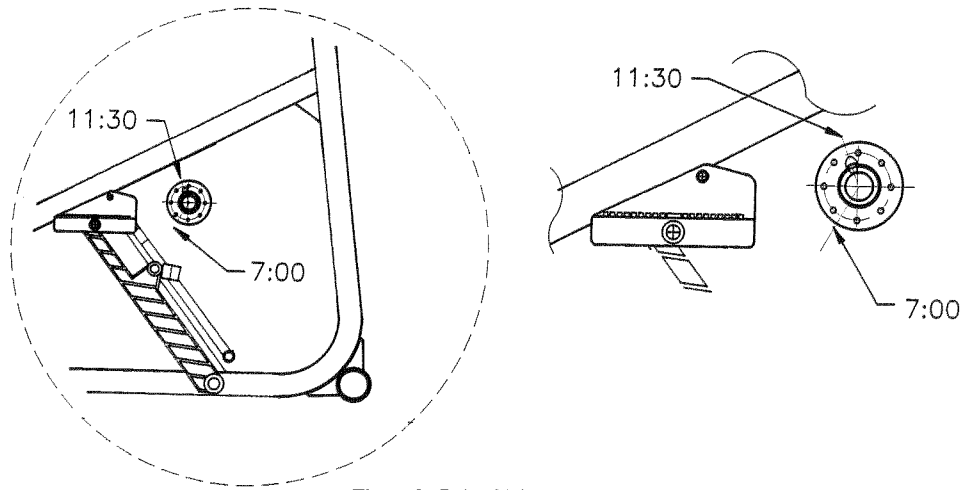


Figure 3. Drive Hub Assembly

A = Snap Ring - 5/8"
B = Flat Washer
C = Pedal, L.H., R.H.
D = Bolt, Shoulder Modified
E = Assy., Leveling Arm
F = Spring Chain Connector
G = Pedal Return Spring
H = Master Link #40
I = Chain, Step
J = Pedal Arm
K = Sleeve, Bearing Insert
L = Link, Master Double Pitch
M = Bearing, 1/4" Steel
N = Pedal Arm Bushing
O = Leveling Arm Bushing
P = Pedal Shaft
Q = 1/2 Nut
R = Wave Washer

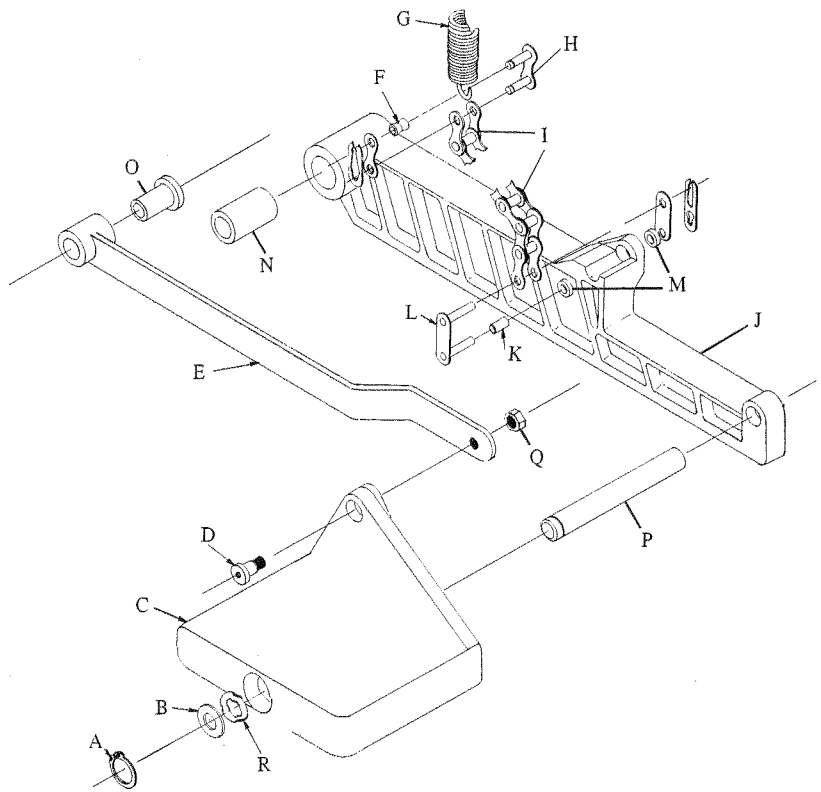


Figure 4. Pedal Arm and Attachments

TABLE 4. TROUBLESHOOTING CHART

Problem	Possible Cause	Remedy
No display or sound on power up	EKG off	Press 2123 and ENTER to turn on EKG.
	Power not available	Connect power supply to known good AC power outlet with proper rating.
	Circuit breaker tripped	Press red reset button on power supply to illuminate red LED or reset rocker switch type circuit breaker.
	Bad power supply	Try power supply on another 4000 PT Exercise System. Replace defective power supply.
	Electrical wires disconnected or open	See the Electrical Circuit Test (page 25) and check for bad electrical connections.
	Defective Console	Try console on another 4000 PT Exercise System. Replace console if defective.
Some dots lit, Interval Timer reads 19, but machine does not function	AC power interruption	Unplug power supply, then wait 5 to 10 seconds and plug it in again.
	Electronic Console defective	Try console an another 4000 PT Exercise System. Replace a defective console.
	Loose connections on alternator	Perform Alternator Tests (page 26).
	Alternator defective	Replace alternator.
	Power supply defective	Try power supply on another 4000 PT Exercise System. Replace if defective.
	Diode defective	Perform Diode Test (page 26).
Will not control speed	Incompatible console Rev.	Replace with compatible console Rev. or set console to proper revision level. (Revision Level Test, page 24 and 25).
	Incomplete circuit	Use a multimeter. Check for continuity from alternator field terminal to console connector pin 2.

Problem	Possible Cause	Remedy
Will not control speed (continued)	Defective diode	Perform Diode Test (page 26).
	Defective load resistor	Perform Load Resistor Test (page 26).
Machine runs slow all the time	Incompatible console Rev.	Replace with compatible console Rev. or set console to proper Revision level. (see Revision Level Test, page 24 and 25).
	Timing belt too tight	Adjust timing belt tension (page 35).
	Poor ground connection	Tighten ground connection at alternator (see wiring diagrams in Appendix).
	Open circuit	Perform Electrical Circuit Test (page 25).
	Defective console	Try console on another 4000 PT Exercise System. Replace defective console.
	Defective alternator	Replace defective alternator.
	Defective Hub Assembly	Perform Power Train Test (page 27).
	Defective Load Resistor	Perform Load Resistor Test (page 26).
Machine starts exercise but will not continue	Defective console	Try console in another 4000 PT Exercise System. Replace defective console.
	Open circuit	Perform Electrical Circuit Test (page 25).
	Defective diode	Perform Diode Test (page 26).
	Defective alternator	Replace defective alternator.
	Defective Power Supply	Try power supply on another 4000 PT Exercise System. Replace defective power supply.

Problem	Possible Cause	Remedy
Step does not return to top	Return spring broken	Replace broken spring.
	Step binding	Clean pedal arm bushing and shaft. If pedal arm bushing is worn, replace bushing and/or pedal arm.
	Defective drive hub assembly	Disassemble drive hub assembly and replace defective parts (see page 28).
Machine develops squeaks	Need for lubrication	See Lubrication section, page 22.
Machine noise excessive, especially at high speeds	Power train problem	Perform Power Train Test (page 27).
	Belt tension	Belt too loose (page 35).
Machine operates sluggishly	Incompatible console Rev.	Replace with compatible console Rev. (Revision Level Test, page 24).
	Timing belt too tight	Adjust timing belt (page 35).
	Dry Transmission	Remove transmission. To check fluid level, remove 3/16" hex head screw from input shaft side; place transmission on flat surface with mounting holes on surface; tilt transmission toward opening and oil should run out before output side is raised 1 inch from surface.
	Defective diode	Perform Diode Test (page 26).
Machine rocks on floor	Floor not level	Move machine to a level floor location.
Pedal loose or slipping	Missing washer	Replace washer.
	Loose pedal bolt	Tighten pedal bolt.
	Defective pedal	Replace pedal.

Problem	Possible Cause	Remedy
Pedal arm slipping and/ or catching	Defective clutch sprocket on drive shaft	Replace sprocket on drive shaft.
Clicking noise on one side	Frozen link on drive or step chain	Clean and relubricate chain. Replace chain if necessary.
Spring breaks frequently	Spring pulley not rotating	See Preventive Maintenance Guide, page 23.
	Twisted spring	Untwist spring.

PARTS REMOVAL AND REPLACEMENT

TOOLS NEEDED TO WORK ON THE 4000 PT EXERCISE SYSTEM

1. Flat blade screwdriver
2. Phillips screwdriver
3. 7/16" open end wrench
4. 1/2" open end wrench
5. 9/16" open end wrench
6. 3/4" open end wrench
7. Adjustable wrench
8. Combination pliers
9. Snap ring pliers
10. Vise grips
11. Wire stripper/crimper tool
12. Allen wrench set (sizes 5/64" to 1/4")
13. Socket set or nut driver set with the following sizes: 3/4", 9/16", 1/2", 7/16", 3/8", 5/16", 1/4"
14. Volt-Ohm meter

REMOVING THE SIDE PANELS

1. Disconnect the electrical power from the power supply by removing the power connector that is plugged into the lower face of the right side panel.
2. Check to see how the panel is mounted. There are two mounted connections at the top and another at the bottom of each panel. These may be screws or captive nuts, and must be removed; or they may be snap-fasteners that can be pulled loose.
3. When you remove the right side panel, lay it on the floor next to the machine. Be careful to prevent damage to the wires from the power connector, mounted on the panel, to connections at the alternator. NOTE: If the power wiring includes a disconnect, separate the connectors to completely remove the side panel from the machine.
4. Reverse the procedure for reassembly.

REPLACING THE TIMING BELT

CAUTION

The timing belt must be adjusted so that the center of either side can be deflected 1/4" from its center line. A tighter belt will cause slow and sluggish operation; a looser belt will cause excessive noise and belt wear.

1. Use a 1/2" wrench to loosen the adjustment bolt that mounts the alternator to the slotted alternator brace.
2. Remove the timing belt.
3. Install the new belt.
4. Move the alternator down or up as necessary to allow 1/4" of play at the center of the vertical portion of either side of the belt.
5. Tighten the alternator to the brace.

REPLACING THE STEP RETURN SPRING

1. Remove the side panel.
2. Detach the return spring from the spring hanger on the center wall in the machine and lower the pedal arm to the floor.
3. Lift the step chain up off the sprocket.
4. Detach the spring from the step chain at the connecting point by removing the master link. Do not lose the retaining clip that holds the link parts together.
5. Check to ensure that spring pulley turns freely. If not, remove pulley, clean the shaft, and replace the pulley.
6. Connect the new spring to the end of the chain.
7. Pass the step chain over the sprocket and the spring under the spring pulley. Reconnect the end of the spring to the spring hanger.

CAUTION

Do not introduce a twist in the spring or it will wear excessively and break during use.

8. Reattach the side panel.

REPLACING THE DRIVE CHAIN

1. Remove the right side panel.
2. Remove the master link from the chain.
3. Remove the chain from the sprockets.
4. Install new chain using reverse procedure.
5. If you have problems installing the chain, check the size of the links (they should be 41A, 61 pitch) and the chain length (it should be 30 1/2" without the master link.) Additionally, if the hub has eight (8) holes instead of four (4), it is possible to reposition the hub to accommodate a slightly different length chain. See section below — Replacing the Drive Hub Assembly — for instructions.
6. Lubricate the new chain. See Lubrication on page 22.

REPLACING THE DRIVE HUB ASSEMBLY

1. Remove both side panels.
2. Remove both step return springs from their hangers and carefully lower both steps to the floor. Lift the step chains up and remove them from the sprockets.
3. Locate and remove the master link for the drive chain, and remove the drive chain.
4. Remove the snap ring from the left end of the drive shaft.
5. See Figure 3, page 28, and remove the parts to the left of the hub assembly.
6. Slide the drive shaft to the right, out of the hub assembly. If you remove the right hand drive sprocket from the drive shaft, do not permit it to become confused with the left hand drive sprocket.
7. Use a 7/16" wrench to remove the four-inch bolts that hold the hub assembly to the frame. Remove the hub assembly.
8. Install the new hub, carefully reversing the disassembly procedure. Be sure that the right hand sprocket and the left hand sprocket are positioned correctly, with the sprockets toward the hub on both sides.
9. If the hub has eight (8) holes instead of four (4), it is possible to reposition the hub to accommodate a slightly different length chain. Placing the grease zerk on the hub at the 11:30 o'clock position will provide the shortest distance between the center of the hub assembly and the transmission shaft. With every hole position counter-clockwise, the distance will be increased by approximately 30 thousandths of an inch (.030.) The longest distance between the hub assembly and the transmission may be obtained by positioning the

grease zerk at the 7:00 o'clock position. See the drawings on page 28 — Figure 3-Drive Hub Assembly.

10. Lubricate the new hub. See Lubrication on page 22.

REPLACING THE GREY CABLE

1. Remove the right side panel.
2. Note and mark (by color) the location of each wire attached to the alternator.
3. Detach wires from alternator. Unscrew wire nuts or detach the connector to disconnect the black and white wires.
4. Disconnect the grey cable from the console.
5. Tie a length of string about five feet long to the wires at the lower end of the grey cable.
6. Pull the grey cable up out of the center frame. Be careful to retain the rubber grommets. Do not pull it far enough to lose the string through the lower holes.
7. Tie the wire ends of the new cable to the top of the string. Feed the new cable down into the center frame, pulling it down with the string.
8. When the wire ends reach the lower hole, pull them out through the hole and seat the rubber grommets in the holes in the frame to prevent damage to the cable.
9. Crimp a lug onto each bared wire end and attach wires to the proper alternator terminals. Attach the wires to the alternator case or adjusting bracket with a wire tie to prevent them from damage by moving parts. Reconnect the black and white wires from the power connector on the right side panel with the wire nuts or connectors.
10. Attach the connector at the upper end of the grey cable to the console and take a test run.
11. If the machine operates properly, this completes the replacement. If necessary, check your wiring against the wiring diagrams in the appendix.

REPLACING A LEVELING ARM

1. Remove the side panel from the same side as the leveling arm to be replaced.
2. Remove the step return spring from the spring hanger and lower the pedal arm to the floor.
3. Remove the 3/16" shoulder bolt and 1/2" nut that attach the leveling arm to the pedal/step.

4. Remove the snap ring that holds the leveling arm to its mounting post.
5. Slide or gently tap the level arm off the mounting post.
6. Clean the post and shoulder bolt before reassembly.
7. Reverse the procedure to reinstall the leveling arm. DO NOT LUBRICATE THE BUSHING.

REPLACING A PEDAL/STEP

1. Remove the leveling arm attachment 3/16" shoulder bolt and 1/2" nut.
2. Remove the step retaining snap ring or bolt and washer.
3. Slide pedal/step off pedal arm shaft.
4. Clean the shaft before reassembly.
5. Reverse the procedure to install the pedal/step. Do not overtighten the bolts.

REPLACING A PEDAL ARM

1. Remove the side panel from the same side as the pedal arm to be replaced.
2. Remove the step return spring from the spring hanger and lower the pedal arm to the floor.
3. Remove the 3/16" shoulder bolt and 1/2" nut that attach the leveling arm to the pedal/step.
4. Remove step retaining snap ring or bolt and washer.
5. Remove pedal/step.
6. Remove master link from step chain connection bushing.
7. Remove snap ring from pedal arm mounting post.
8. Slide or gently tap the pedal arm off the mounting post.
9. Clean the pedal arm mounting post before reassembly.
10. Reverse the procedure to reinstall the pedal arm. DO NOT LUBRICATE THE BUSHING.

REPLACING A SPRING PULLEY

1. Remove the side panel.
2. Detach the pedal return spring from the hanger. Lower the pedal arm to the floor.
3. Remove the nut or snap ring that holds the pulley on the shaft. Pull the pulley off.

4. Clean the pulley shaft. DO NOT LUBRICATE.
5. Slide the new pulley onto the shaft.
6. Fasten the pulley on the shaft with the nut or snap ring. Do not overtighten or the pulley will not turn freely.

REPLACING A STEP CHAIN

1. Remove the side panel.
2. Detach the pedal return spring from its hanger and lower the pedal arm to the floor.
3. Remove master link between the spring and the step chain. Retain the sleeve for reassembly.
4. Remove the master link step chain connection at the pedal arm.
5. Reverse the procedure to install the new step chain.
6. Lubricate the step chain. See Lubrication on page 22.

REPLACING BEARINGS IN THE STEP CHAIN CONNECTION

1. Remove the side panel.
2. Remove the step return spring from the spring hanger and lower the pedal arm to the floor.
3. Remove the master link from the step chain connection.
4. Remove the bearings from the pedal arm. If the bearings are difficult to remove, use WD40 to loosen the rust and corrosion and a hammer and punch to remove the bearings.
5. Install the new bearings. Place one bearing on each side of the pedal arm and use a construction-style C-clamp to press the bearings. Be sure the C-clamp covers the outer race of the bearing to prevent bearing damage. See Figure 4 on page 29.

REPLACING THE TRANSMISSION ASSEMBLY

1. Remove both side panels.
2. Locate and remove master link from drive chain (closed loop chain on right side). Remove the drive chain.
3. Loosen the bolt that holds the alternator to the support brace. Remove the alternator timing belt.
4. Detach the alternator support brace from the transmission by removing the two mounting bolts from the forward face of the transmission.

5. Remove the four 7/16" bolts that secure the transmission to the frame. Remove the transmission.
6. Attach the new transmission to the frame with the four bolts. Do not tighten to more than 14 inch-pounds.
7. Attach the support brace to the new transmission with two mounting bolts.
8. Install the timing belt around the transmission and alternator pulleys.
9. Loosen the set screw on the transmission pulley and align it with the alternator pulley.
10. Position the alternator so that the timing belt has 1/4 inch of deflection from the center line at the center between the pulleys. Tighten the bolt to hold the alternator in the proper position.

REPLACING THE HANDRAIL

1. Remove the console from the frame. Handle it with care.
2. Lift the back leg of the machine far enough to have access to the bolts that attach the handrail to the back leg. Support the back leg during this procedure.
3. Use a 7/16" socket wrench with an extension to remove the bolts that hold the handrail to the rear legs. These bolts are accessed through holes in the bottom of the rear leg.
4. Remove the four (4) 1/4" saddle bolts just beneath the console area.
5. Remove the handrail from the frame.
6. Reverse the procedure to replace the handrail.

REPLACING THE HANDGRIPS

Two lengths of handgrips are available for the StairMaster 4000 PT Exercise System. If you have the shorter (9 1/2" long) handgrips, you can replace them with the following instructions. However, if you have the longer handgrips, they can be replaced *only* by a factory-authorized service technician.

1. Remove the console from the frame. Handle it with care.
2. Lift the back leg of the machine far enough to have access to the bolts that attach the handrail to the back leg. Support the back leg during this procedure.
3. Use a 7/16" socket wrench with an extension to remove the bolts that hold the handrail to the rear legs. These bolts are accessed through holes in the bottom of the rear leg.

4. Loosen (do not remove) the four saddle bolts just beneath the console area. This will permit you to lift the handrail free from the rear leg.
5. Carefully cut off (or slide off if possible) the old grips.
6. Soak the new grips in hot (not boiling) water for five minutes.
7. Apply soapy solution to handrails and inside the new grips.
8. Slide new grips into place and wipe handrails until dry.
9. To ensure that the handgrips do not move, slide the grips away from their intended location, dry the handrail and apply a hairspray, and slide the grips back into place.
10. Reattach the handrails to the rear leg with the bolts that were removed in step 3.
11. Tighten the four saddle bolts below the console area.
12. Mount the console in place and attach the connector from the grey cable to the connector on the bottom of the console.

REPLACING THE ALTERNATOR

1. Disconnect the DC power cable from the right side cover.
2. Remove both right and left side covers.
3. Note the origin and color of each wire at the alternator terminals; remove the wires.
4. Use a 1/2" socket or wrench to remove alternator adjustment screw.
5. Use a 3/4" or adjustable wrench to loosen the self-locking nut from the alternator post. Allow alternator to pivot downward until timing belt is loose.
6. Remove the timing belt. Inspect the belt for wear, and replace if the belt is cracked, worn, cut, or is missing any timing notches.
7. Remove the self-locking nut from the alternator mounting post.
8. Remove the alternator.
9. Reverse the procedure to replace the alternator.
10. Note the brand name of the alternator and check the wiring against the appropriate wiring diagram in the Appendix.

NOTICE OF EMI COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRÉSENT APPAROIL NUMÉRIQUE N'ÉMNT PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAROILS NUMÉRIQUES (DE LE CLASSE A) PRESCRITES DANS LE RÈGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA.

GROUNDING INSTRUCTIONS

The 4000 PT exercise system must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This machine is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER — Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the machine is properly grounded. Do not modify the plug provided with the machine. If it will not fit the outlet, have a proper outlet installed by a qualified electrician.

The 4000 PT exercise system is for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug illustrated in sketch A in Figure 5 (page 43). A temporary adapter that looks like the adapter illustrated in sketches B and C (also in Figure 5) may be used to connect this plug to a 2-pole receptacle as shown in sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet (sketch A) can be installed by a qualified electrician. The green colored rigid ear, lug, or the like extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by a metal screw.

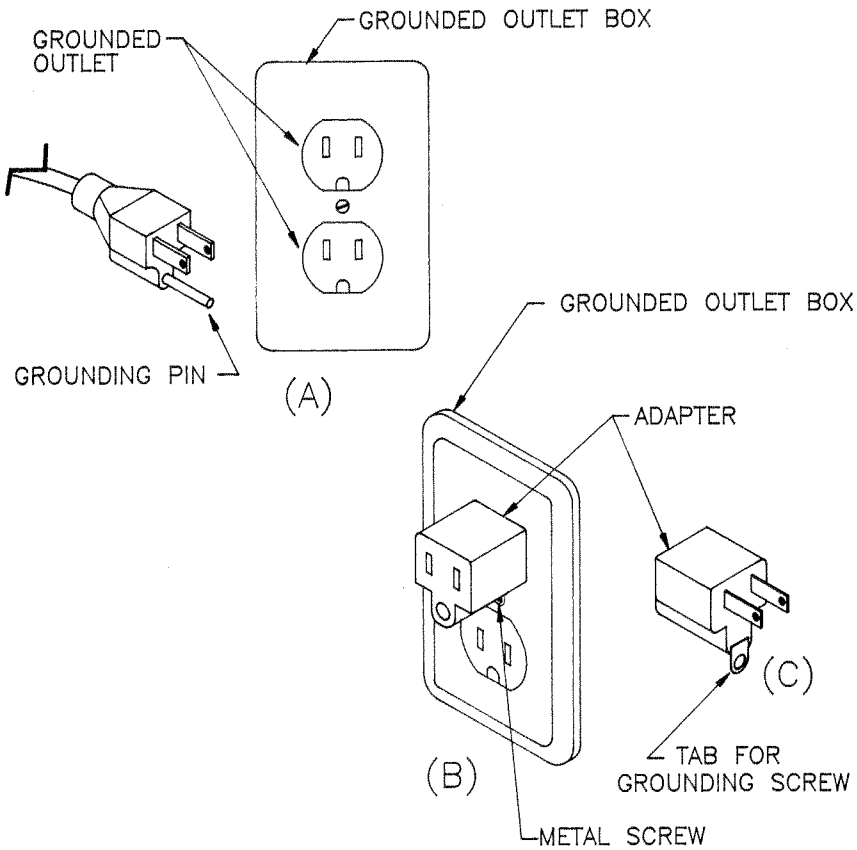


Figure 5. Grounding Instructions

APPENDIX

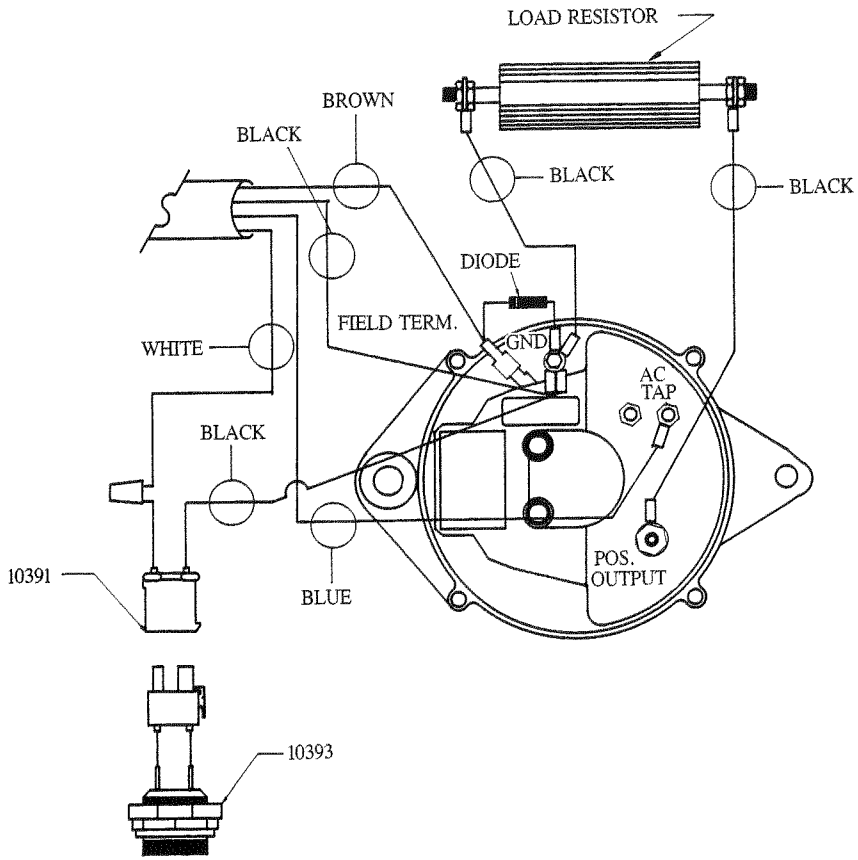
Wiring Diagram, Motorola (Prestolite) Alternator

Wiring Diagram, Bosch Alternator

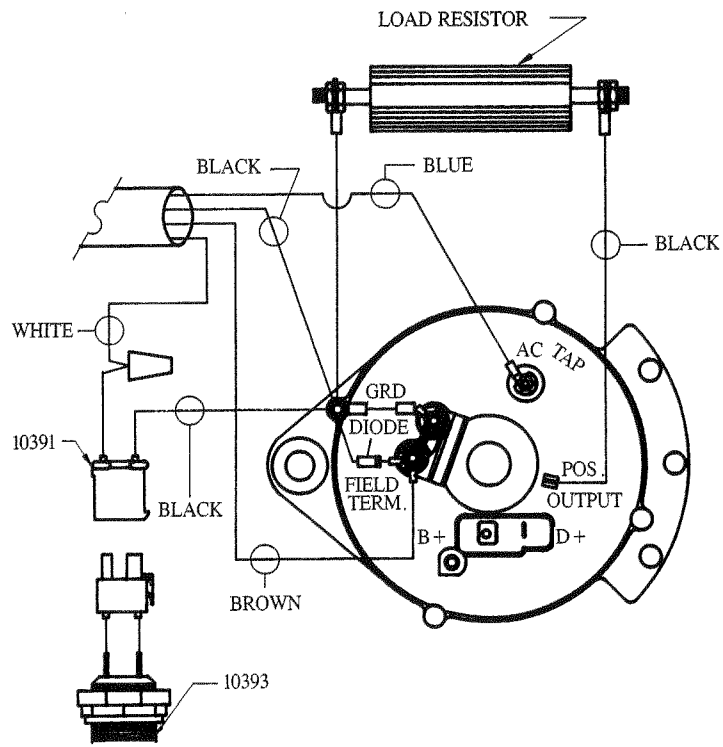
To Order Parts and Obtain Troubleshooting Help

United States Sales Offices

List of Codes



Wiring Diagram, StairMaster 4000 PT Exercise System with Motorola (Prestolite) Alternator



Wiring Diagram, StairMaster 4000 PT Exercise System with Bosch Alternator

LIST OF CODES

40	ENTER	Turn on teletype sound for scrolling messages only.
41	ENTER	Turn off teletype sound for scrolling messages only.
105	ENTER	Clear the entire memory (scrolling messages and custom workouts).
109	ENTER	Display summary for partial workouts (Rev 1.2, 1.3, 1.5, 2.1 and 2.2 only)
1010	ENTER	Change a workout length.
1650	ENTER	Program a custom workout.
2121	ENTER	Turn off EKG symbol and turns on scrolling message; display is blank if no scrolling message has been programmed.
2123	ENTER	Turn off scrolling message and turns on EKG symbol.
3121	ENTER	Display current odds for jackpot option.
4101	ENTER	Run a custom workout.
7607	ENTER	Program a scrolling message.
7703	ENTER	Display number of hours and floors (Rev. 2.1 and 2.2 only).
8089	ENTER	Program odds for jackpot option.
9750	ENTER	Change console to Rev. E (Rev. 1.5, 2.1 and 2.2 only).
9751	ENTER	Change console to Rev. D (Rev. 1.5, 2.1 and 2.2 only).
9760	ENTER	Change console to English system (Rev. 1.5, 2.1 and 2.2 only).
9761	ENTER	Change console to Metric system (Rev. 1.5, 2.1 and 2.2 only).
97405	ENTER	Lock-in a workout length (Rev. 1.5, 2.1 and 2.2 only).
Speed up 15	ENTER	Display Test
107	ENTER 1	Alternator Circuit Test #1
107	ENTER 2	Alternator Circuit Test #2
107	ENTER 3	Keypad Test
107	ENTER 4	Revision Level test
107	ENTER 5	Variables test — display whether the console is time locked, the units of measure (English or metric), and the alternator version. (Rev. 1.5 and 2.2 only.)

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5M/8/93

STAIRMASTER®
4000 PT
OWNER'S MANUAL

StairMaster®
THE RESULTS YOU WANT™

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P/N 22868-A

WARRANTY

This is to certify that the StairMaster® 4000 PT® exercise system is warranted by StairMaster Health & Fitness Products, Inc. to be free of all defects in materials and workmanship. This warranty does not apply to any defect caused by negligence, misuse, accident, alteration, improper maintenance, or an "act of God." This warranty is non-transferable from the original owner.

If, within three years from the date of purchase, any part of the StairMaster 4000 PT exercise system should fail to operate properly (except any accessories), contact our Customer Service Department to report the problem. When calling, please be prepared to provide the customer service representative with the following information:

- Your name, customer number, shipping address, and telephone number
- The model and serial number of the inoperable machine
- The date(s) of purchase for the inoperable machine(s)
- Your billing address

This information will ensure that you are the only one ordering parts under your warranty protection. If warranty replacement parts are shipped to you, you may be required to return the inoperable parts. To facilitate this process, the following policy has been established:

- Please call our Customer Service Department to receive a Return Material Authorization (RMA) prior to shipment.
- StairMaster Health & Fitness Products, Inc. will incur all freight charges for warranty parts ordered for a machine that is less than 45 days old. The parts will be shipped to you via an overnight courier.*
- You are responsible for freight charges on warranty parts for machines that are more than 45 days old. You will not be responsible for the return shipment of the inoperable parts.
- Some inoperable warranty parts must be promptly returned to our Customer Service Department. We will pay the shipping cost for the inoperable warranty parts. Detailed instructions are included with each warranty replacement part.

StairMaster Health & Fitness Products, Inc. neither makes, assumes, nor authorizes any representative or other person to make or assume for us, any other warranty whatsoever, whether expressed or implied, in connection with the sale, service, or shipment of our products. We reserve the right to make changes and improvements in our products without incurring any obligation to similarly alter products previously purchased. In order to maintain your product warranty and to ensure the safe and efficient operation of your machine, only authorized replacement parts can be used. This warranty is void if parts other than those provided by StairMaster Health & Fitness Products, Inc. are used.

* Note: Aerosol products cannot be transported via air.

Regular use of the StairMaster® 4000 PT® exercise system is a safe and effective way to develop aerobic fitness while conditioning the major muscles of the lower body. To get the best results, and to keep your machine in peak operating condition, you should carefully read and follow the guidelines presented in this manual.

WHAT IS IN THIS MANUAL?

The first part of this manual includes sections on safety, installation, operating instructions, and preventive maintenance. The second part contains detailed information on problem troubleshooting and repair procedures. An Appendix at the end of the manual provides additional information for the owner.

Throughout this manual, console keypad keystrokes are enclosed in [ ]. The names of the keys and special console operational modes are shown in capital letters. For example, your machine is ready to use when the console displays "SELECT WORKOUT." Press [MANUAL] to start the MANUAL exercise program.

WHAT IS THE STAIRMASTER 4000 PT EXERCISE SYSTEM?

The StairMaster 4000 PT exercise system is a vertical climbing machine with an independent step action. The independent step action, combined with the patented pedal geometry featured on all StairMaster steppers, provides an aerobic workout equivalent to uphill running or climbing stairs, but without the high-impact pounding to the joints and muscles.

CONTENTS

CONTENTS

LIST OF ILLUSTRATIONS

WHEN USING ELECTRICAL EQUIPMENT, ALWAYS FOLLOW THESE BASIC PRECAUTIONS:

IMPORTANT SAFETY INSTRUCTIONS

This symbol appearing throughout this manual means Attention! Be Alert! Your safety is involved.

The following definitions apply to the words "Danger" and "Warning" found throughout this manual:

DANGER - Used to call attention to IMMEDIATE hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.

WARNING - Used to call attention to POTENTIAL hazards that could result in personal injury or loss of life.

READ ALL INSTRUCTIONS BEFORE USING THE MACHINE.

DANGER To reduce the risk of electrical shock, always unplug the external power supply from the AC wall outlet before cleaning, maintaining, or repairing.

WARNING To reduce the risk of burns, electric shock, or injury to persons:

1. The external power supply should always be unplugged from the AC wall outlet before removing or installing parts. Never make adjustments or repairs while an exercise program is in progress.

2. Close supervision is necessary whenever the machine is used by or near children, invalids, or disabled persons.

3. Keep your hands away from all moving parts and keep your feet on the pedals while exercising. Do not operate the machine with the side covers removed.

SAFETY GUIDELINES

4. Use this machine only for its intended use as described in this Manual. Do not use parts, attachments, or accessories other than those provided by StairMaster® Health & Fitness Products, Inc.

5. Do not use the external power supply if it has a damaged cord or plug, or if it is not working properly, if it has been dropped or damaged, or dropped into water. Contact our Customer Service Department at 1-800-331-3571 to arrange for the return of damaged parts.

6. Connect the external power supply to a properly grounded AC wall outlet; refer to the "Grounding Instructions" section. Keep all cords away from heated surfaces.

7. To disconnect the external power supply, remove the plug from the AC wall outlet.

8. Never drop or insert any object into any opening on the machine.

9. Do not operate where aerosol (spray) products are being used.

10. Always wear insulated gloves when handling batteries.

11. Do not crush, incinerate, or dismantle the battery. The electrolyte contains sulfuric acid which can cause serious damage to eyes and skin. Should this occur, flush profusely with water and seek medical attention.

12. Do not use the machine outdoors.

The safety level given by the design of this equipment can only be maintained when the equipment is regularly examined for damage and wear. Inoperable components shall be replaced immediately or the equipment shall be put out of use until it is repaired. Failure to follow all guidelines may compromise the effectiveness of the exercise experience, expose yourself (and possibly others) to injury, and reduce the longevity of the machine. Follow all training instructions listed in the manual and/or on the machine. Physical injury may result from incorrect or excessive training.

SAVE THESE INSTRUCTIONS

Throughout this manual, all references to the left or right side and to the front or back are made as if you were on the machine, ready to exercise. For example, the external power supply is plugged into the connector on the right side cover. The dimensions and general specifications of the machine are listed in Table 1.

Table 1. Dimensions and Specifications for the StairMaster® 4000 PT® Exercise System

Physical Dimensions:	
Length	41 inches (104 cm)
Width	32 inches (81 cm)
Height	58 inches (147 cm)
Weight	130 pounds (59 kg)
Power Supply Specifications:	
U.S., Canada, Japan	120 VAC, 50/60 Hz, 2.5 Amp
International	230 VAC, 50/60 Hz, 2.5 Amp

* Optional power supplies, intended for use outside the United States, are available for 220-240 VAC, 50/60 Hz power requirements.

INSTALLATION INSTRUCTIONS

Your machine requires minor assembly before use. Machines shipped outside the United States need to be uncrated before they can be assembled; refer to the "Uncrating Instructions" included with your machine for the details.

1. Remove all shipping material from your machine including the box that is strapped to the pedals.

2. The rubber end caps, one on each leg of the machine (see Figure 1), are designed to compensate for uneven floors. Each face of the caps is a different thickness and is numbered. Twist the caps, as needed, to stabilize the machine. Make sure the machine is level before you use it for the first time.

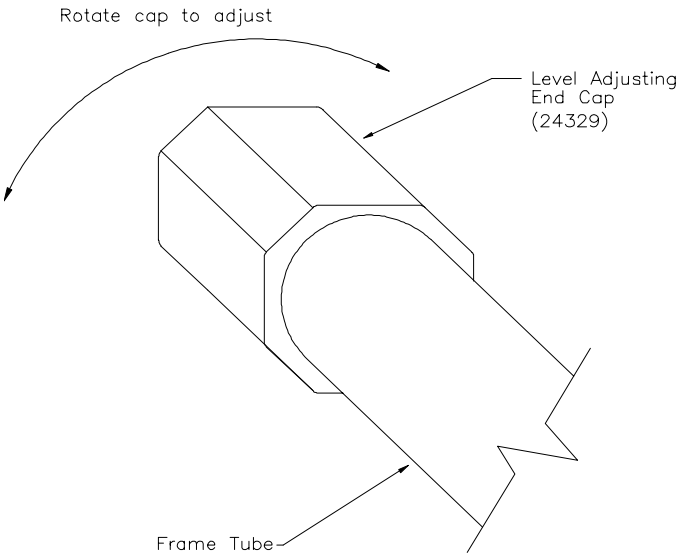


Figure 1: Level Adjusting End Caps

3. Open the box you removed from the pedals and remove the external power supply.

4. Connect the DC cable of the power supply to the power connector near the bottom of the right side cover.

5. To reduce the hazard of electrical shock,place the power supply on the floor in a location to avoid exposure to perspiration and near an AC wall outlet. The power supply must rest on a solid surface like a rubber mat or block of wood, do not place the power supply directly on carpet.

6. Check to be sure that the input AC power rating marked on the power supply matches the available power. If it does not, obtain the match ing power supply from StairMaster® Health & Fitness Products, Inc. before proceeding any further.

⚠ WARNING

TO REDUCE THE RISK OF ELECTRICAL SHOCK AND FIRE AND TO PREVENT SEVERE DAMAGE TO THE MACHINE, USE ONLY THE POWER SUPPLY APPROVED FOR USE WITH THIS EQUIPMENT. IN ADDITION, YOUR MACHINE MUST BE PROPERLY GROUNDED.

7. Connect the AC power cord to the AC wall outlet. Refer to the "Grounding Instructions" section if the AC wall outlet does not accept a three-prong plug.

8. Watch the console. The console should display a software revision code and then show "SELECT WORKOUT." If the console does not, unplug the power supply and then plug it back in. If the console still does not power up correctly, contact our Customer Service Department. Refer to the Appendix for the appropriate phone number.

9. The display "SELECT WORKOUT" tells you the machine is ready to use.

BASIC OPERATING INSTRUCTIONS

GENERAL GUIDELINES FOR SAFE OPERATION

⚠ WARNING

THESE GUIDELINES ARE DIRECTED TO YOU, AS THE OWNER OF THE MACHINE.
YOU SHOULD INSIST THAT ALL USERS FOLLOW THE SAME GUIDELINES.
YOU SHOULD MAKE THIS MANUAL AVAILABLE TO ALL USERS.

1. Obtain a complete physical examination from your medical doctor and enlist a health/fitness professional's aid in developing an exercise program suitable for your current health status.

2. When working out for the first time, use the MANUAL exercise program at the lower speeds until you feel comfortable and capable of faster speeds.

3. The speed and duration of your exercise program should always be subject to how you feel. Never permit peer pressure to exceed your personal judgment while exercising.

4. Overweight or severely deconditioned individuals should be particu larly cautious when using the machine for the first time. Even though such individuals may not have histories of serious physical problems, they may perceive the exercise to be far less intense than it really is, resulting in the possibility of overexertion or injury.

5. Although all equipment manufactured by StairMaster® Health & Fitness Products, Inc. has been thoroughly inspected by the manufac turing facility prior to shipment, proper installation and regular maintenance are required to ensure safety. Maintenance is the sole responsibility of the owner.

YOUR FIRST WORKOUT ON THE STAIRMASTER® FREECLIMBER® EXERCISE SYSTEM

1. Warm up with light calisthenics and easy stretching exercises for at least five minutes before beginning your exercise program.

⚠ WARNING

IF AT ANY TIME DURING YOUR WORKOUT YOU FEEL CHEST PAIN, EXPERIENCE SEVERE MUSCULAR DISCOMFORT, FEEL FAINT, OR ARE SHORT OF BREATH, STOP EXERCISING IMMEDIATELY. IF THE CONDITION PERSISTS, YOU SHOULD CONSULT YOUR MEDICAL DOCTOR IMMEDIATELY.

2. Hold onto the handlebars and step up onto the pedals. Stand up straight. The pedals will sink slowly toward the floor.

3. Select the MANUAL exercise program so you can control the pace of your first workout and get used to the exercise motion. Press [MANUAL] and then press [ENTER]. The console will return to the start screen if you do not press [ENTER] within 60 seconds.

4. The console will prompt you to enter your body weight. Enter your weight in pounds (or kilograms if the console is set up for metric units). Correct entry errors by pressing [CLEAR] before you press [ENTER].

5. The console will prompt you to enter your intensity level. Enter your desired intensity level. Correct entry errors by pressing [CLEAR] before you press [ENTER].

6. The console will prompt you to enter the workout time in one minute increments between 5 and 99 minutes. Press [1], [0], [ENTER] to exercise for ten minutes. If you do not start exercising within 60 seconds, the console will return to the start screen.

Begin Exercising

7. Take deep, comfortable steps. Do not let the pedals touch the floor or contact the upper stop. When you begin to exercise, the MANUAL

program starts at level three.

8. As you become comfortable with exercise motion, press [LEVEL: ∧] and [LEVEL: ∨] to adjust your climbing speed.

9. Relax and stand up straight while exercising. Use the handlebars for balance (see Figure 5).

10. Select an intensity level that allows you to stay in the middle of the pedal range of motion. Faster is not always better. Exercise at a level that is consistent with your fitness level.

Rest Periods

11. You can stop and rest as many times as necessary for up to one minute for each rest period during all programs. To stop, either press [STOP] or step off the machine.The console returns to the start screen if you rest longer than the allotted rest period. Follow the onscreen prompt to continue your work out after a rest period.

Cool Down

12. When you are finished with your workout, the machine will slow down and the message "GOAL ATTAINED" will be displayed. You can cool down on the machine by continuing to step. The console timer will continue to count up from the selected time to the maximum time, and the intensity level will default to level 3. For example, if the time limit was set for 30 minutes and you worked out for 25 minutes, the cool down period would last for 5 minutes, or until you stepped off the machine. If no time limit is set, the console will count up to 99, return to 0, and start counting up again. Press [STOP] to end the cool down.

13. You can also cool down by getting off the machine walking or stretching for at least five minutes. Lift one foot slowly until the pedal arm contacts the upper stop. Place that foot on the floor. Repeat for the other foot. Do not let the pedals slam into the upper stops, since this may cause unnecessary wear and tear.

HEART RATE INPUT

The 4000 PT console uses telemetry (e.g., Polar®) heart rate signal detection. Ensure that your console is set up for telemetry signal detection only. There is a short "lock out" period at the beginning of each workout session during which the console first detects a signal and then validates the signal type. The duration of this shorter, initial "lock out" period differs between telemetry and contact heart rate.

- Telemetry heart rate - after the initial belt signal is detected, the console will enter a validation phase in which four good heart beat signals within four seconds are required before locking on telemetry heart rate signals for the duration of the workout session. During the validation phase the console will not recognize contact heart rate signals.

Locked/Non-locked Option

When the "not locked" option is selected the heart rate source signal is not fixed during the exercise (if the signal is lost either input will be valid). If the "locked" option is selected then the heart rate source signal is locked on the first detected signal during the workout. To set a heart rate signal input, or to turn off the heart rate option all together, perform the following steps:

1. On the console keypad, press [LEVEL: Ù], [3], [2]. At this point the screen will display "HR INPUTS." Press [ENTER] to select this option.

2. There are 4 options to handle heart rate input signals. Only 2 of those options are appropriate for the 7000 PT; "Both HR Off", and "Telemetry Only." Press the [SELECT] key to scroll past the other options until you find either "Both HR Off" or "Telemetry Only." Press the [ENTER] key to select the desired option.

   "TELEMETRY ONLY" - locks out contact heart rate signals and will only detect telemetry signals. Set your console to this default.

"BOTH HR OFF" - turns off the ability to detect any signal at all. Used in rare situations where there is excessive interference with the heart rate signals. This option turns off disables the Constant HR program and the Fitness Test program.

Error Messages

Text line messages are only seen in the Constant Heart Rate and Fitness Test programs due to the design of the program that necessitates a valid heart rate signal at all times during the program.

"**CHECK HR BELT**" - The heart rate signal has been missing for the last 30 seconds in telemetry signal detection.
"HR BELT NEEDED" - No telemetry belt signal been sensed during the initial setup time.
"**HR MODE DISABLED**" - No heart rate signal is allowed due to the set up option that was chosen. Heart rate monitoring is not possible.

TELEMETRY HEART RATE

The StairMaster® 4000 PT features telemetry (Polar®) heart rate monitoring. The system consists of the receiver, located on the stepper, and a transmitter belt (purchased separately) worn across your chest. The monitoring function is activated as soon as you strap on the chest belt and step within range of the receiver in the machine. Two electrodes on the underside of the chest belt sense the heart rate signal and send it to the receiver. The heart symbol on the console pulses to indicate that the console is receiving a valid signal. A microprocessor in the console calculates the heart rate and displays it, in beats per minute, on the console.

Using the Transmitter Belt

⚠ WARNING

PACEMAKER USERS SHOULD NOT USE THE POLAR TRANSMITTER BEFORE CONSULTING THEIR DOCTOR.

Before you put the transmitter belt on, wet the two electrode patches (the grooved rectangles on the reverse side of the belt). Secure the transmitter belt as high under the pectoral muscles (chest) as is comfortable. The transmitter belt should fit snugly and comfortably, and allow normal breathing. When the console detects a heart rate signal, heart rate is shown in the display automatically. Your heart rate in beats per minute and a pulsing heart icon are displayed on the console.

After the initial belt signal is detected, the console will enter a validation phase in which four good heart beat signals lasting four seconds each are required before locking on telemetry heart rate signals for the duration of the workout session. During the validation phase the console will not recognize contact heart rate signals. If you do not see a heart rate on the console, try one of the following:

- Move closer to the console.

- Tighten the elastic part of the chest belt.
- Adjust the belt higher or lower on your chest.
- Remoisten the electrodes.
- Test your chest strap with a machine that you know is working, or with a heart rate watch that you know is working.
- If possible, replace or exchange your console with a console (from the same type of machine) that you know is working and retest the machine.
- Visually check that the heart rate receiver is positioned correctly in the neck cover. The heart rate receiver jack should point down. Ensure that the heart rate receiver is connected to the console, and that the connection is not loose. If possible, swap the heart rate receiver with one from another machine.

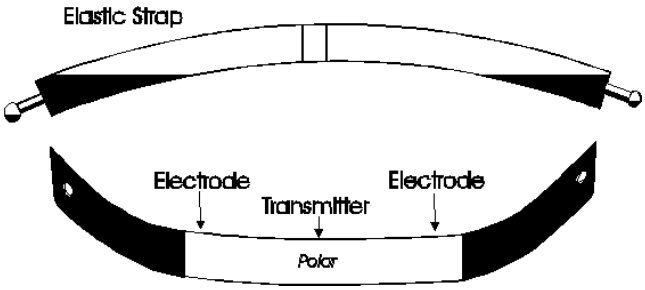


Figure 2: Transmitter Belt

Maintaining the Transmitter Belt

Clean the chest belt regularly with mild soap and water, then dry thoroughly - residual sweat and moisture keep the transmitter active and drain the battery in the transmitter. Do not use abrasives or chemicals such as steel wool or alcohol for cleaning, as they can damage the electrodes permanently. You can order replacement belts from StairMaster, Polar Electro, Inc., or your local fitness store:

StairMaster	800-331-3578	P/N 64000
Polar Electro, Inc.	800-227-1314	

The StairMaster® 4000 PT® systems console is divided into seven sections: the display window, the workout options, the numeric keypad, the entertainment keypad, the workout statistics, the stop key, and the intensity level keys (see Figure 3).

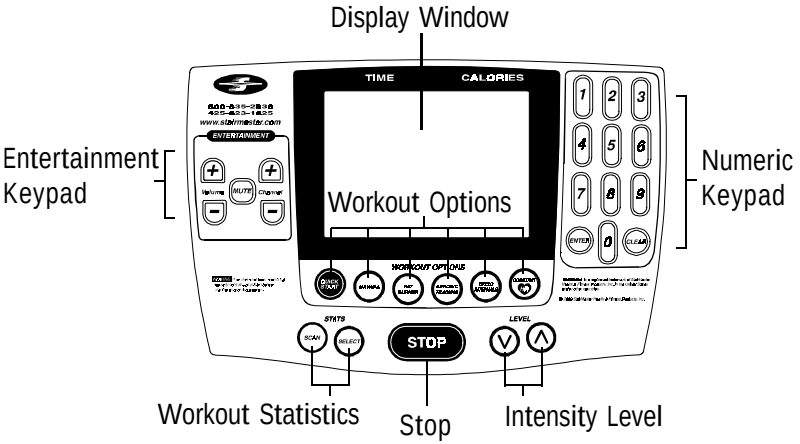


Figure 3: 4000 PT Console

DISPLAY WINDOW

• ***Time*** - The selected workout time is displayed in the upper left section of the display window. Once the time is entered, the timer will count down, in minutes and seconds, until the workout is finished or stopped. If [0] is entered in the MANUAL or CONSTANT HEART RATE program, the timer will count up.

• ***Calories*** - The real-time amount of calories burned is continually updated and displayed in the upper right section of the display window.

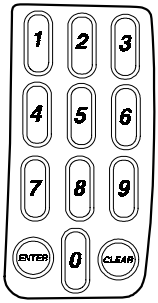
• ***Interval Timer*** - The interval timer is displayed below the Time. The interval timer counts down time left within each interval.

• ***Heart Rate*** - Current heart rate is displayed below the Calories, next to the heart icon.

• ***Workout Option Profile*** - A profile of the selected exercise program appears in the lower section of the display window during a workout. The taller the column, the higher the intensity (watts) for that interval. The flashing column shows your current interval. The flashing column moves from left to right across the display as you complete each interval.

4000 PT CONSOLE

NUMERIC KEYPAD

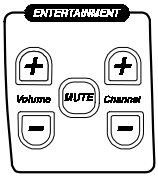


The numeric keypad is located on the right side of the console. Before the exercise program begins, the numbers are used to enter data in response to the console prompts.

• ***Enter*** - Confirms workout selections and stores the information used by the console to calculate workout statistics.

• ***Clear*** - Erases information from the console memory if pressed before [ENTER].

ENTERTAINMENT KEYPAD



The 4000 PT® comes equipped to facilitate the use of commercial entertainment systems. Using any of these keys will send an output signal through the Communication Specification for Fitness Equipment (C.S.A.F.E.) port to a connected C.S.A.F.E. or compatible system. If a system is not connected, pressing these keys will have no effect.

• ***Volume Up/Down*** - Increases or decreases the volume level of the audio source.

• ***Mute*** - Removes the audio sound from the headphones.

• ***Channel Up/Down*** - Changes the channel of the commercial entertainment system.

INTENSITY LEVEL KEYS

The exercise intensity level may be changed at any time during a workout. Pressing the [∨] key decreases the intensity and pressing the [∧] key increases the intensity.

STOP KEY

Press the [STOP] key any time you want to pause the exercise program for up to one minute. Press [STOP] a second time, or [1], and The console will return to the "SELECT WORKOUT" Prompt.

WORKOUT STATISTICS

During the exercise program, the Stats keys are used to track workout statistics which are then shown in the display window. Pressing the [SELECT] key turns off the scanning feature and shows the statistic of choice in the display window. Continue to press the [SELECT] key until you reach the desired statistic. Pressing the [SCAN] key will prompt the console to cycle through the following statistics:

- ***Distance*** - Provides a cumulative total of the equivalent distance (in miles or kilometers), you would have traveled while riding a bicycle outdoors at the same relative intensity.
- ***Calories\|Hour*** - Provides a running total of the number of calories burned during a workout.
- ***Rate -*** Displays the current steps per minute.
- ***Floors*** - Displays the equivalent number of floors climbed with an 8-inch step. There are 16 steps per floor, and 48 floors per mile.
- ***Level*** - Shows the current intensity level between 1 (the easiest) and 20 (the hardest).
- ***Watts*** - Displays the exercise intensity in watts (746 watts = 1 horsepower).
- ***METs*** - Gives you the relative energy cost of exercise. MET stands for multiples of the resting metabolic rate. While you are sitting quietly, your body consumes oxygen at the rate of about 3.5 milliliters per kilogram of body mass per minute. When you exercise, your body needs more oxygen in order to function. For example, exercising at 10 METs requires ten times the resting rate of oxygen consumption, or about 35 milliliters per kilogram per minute. During a workout, this key shows the current MET level. During the workout summary, the average MET level is displayed.
- ***Target Heart Rate*** - Available only during the Constant Heart Rate program. Shows the selected target heart rate.

At the completion of a workout, the statistic averages are calculated based on the accumulation of data during the workout program, and not not including the cool down period.

EXERCISE PROGRAM KEYPAD

The exercise keypad is located below the display and to the left of the function keypad. While the console is in the "SELECT WORKOUT" mode, press one of the exercise program keys to preview the desired workout. There are six workout programs with the following standard defaults (pressing [ENTER] without inputting data first will prompt the console to enter these values):

- **Weight** - 175 lbs.
- **Intensity Level** - 3
- **Workout Time** - The default time in the programmed workouts and Quick Start is 20 minutes. The Manual and Constant Heart Rate programs do not have a specified default time. In these programs, the console timer will count up to the maximum time of 99 minutes, and then return to 0.
- **Age** (Constant Heart Rate program only) - 40 years

Once you have selected a program, the prompts are:

- "**ENTER BODY WEIGHT**" - type in your body weight in pounds (or kilograms if your console is set to metric units).
- "**ENTER LEVEL 1 - 20**" - select your intensity level with level 1 being the easiest and level 20 the hardest.
- "**ENTER TIME 5 - 99**" - select the workout duration in one minute increments from 5 to 99. Press 0 in the MANUAL and CONSTANT HEART RATE program to workout for an unspecified amount of time.

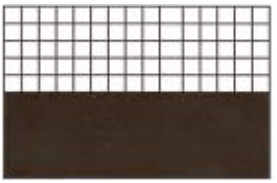
The Quick Start Program

Provides an immediate start, without having to enter any user information. This program uses the standard default settings for derivation of calories burned.

The Manual Program

After pressing the [MANUAL] key, enter user and workout information. Begin exercising at the selected level. If desired, adjust the workout manually by using the intensity level arrow keys. The profile in the display window is divided into 15 equal intervals within the workout time. The profile is based

on the selected intensity level, with 2 levels equating to one vertical bar.

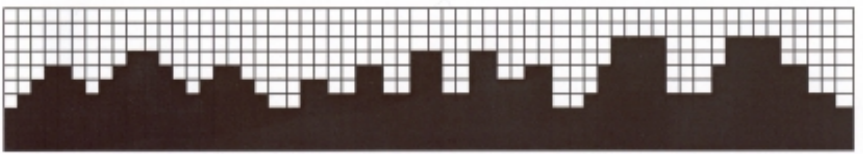


The Fat Burner Program

The Fat Burner program is a 60-interval workout designed for people just starting a weight control program. The relative intensity level is indicated on the profile and any changes in the intensity level will continue for the remainder of the program.

The Aerobic Training Program

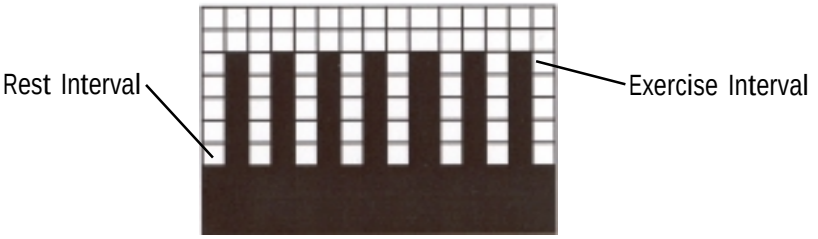
The Aerobic Training program is a 60-interval workout designed to increase aerobic capacity. The relative intensity level is indicated on the profile and any changes in the intensity level will not change the look of the remaining profile.



The Speed Intervals Program

The Speed Intervals program is a workout with 8-rest intervals and 7-exercise intervals that alternate speed/intensity level changes. You can change the REST interval speed/level and the EXERCISE interval speed/level independently, using the level keys. For example, if you decrease the intensity level during a rest interval then subsequent rest intervals will be the same. However, the EXERCISE interval remains at the same intensity level you started with. To change the intensity level of the EXERCISE interval, you must change

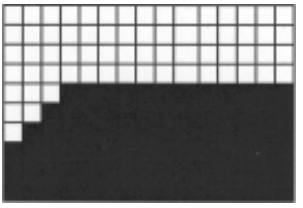
the intensity level during an EXERCISE interval. The intensity level shown during an EXERCISE interval is indicative of your current speed. However, the current speed during a REST interval is equal to a scaled percentage of the displayed intensity level. Note that the program profile does not change at any time during the workout session.



The Constant Heart Rate Program

The Constant Heart Rate program maintains a chosen target heart rate by automatically varying the climbing speed during each workout. The default target heart rate is equal to 70% of your maximum heart rate which is calculated by the following equation: 220 - (Age) x .70. Choose a different target heart rate (between 80 and 180 beats per minute) at any time during the workout by using the numeric keypad to enter the new target heart rate, followed by the [ENTER] key. The following messages may be shown during a workout:

- *"***CHECK HR BELT***"* - The heart rate signal has been missing for the last 30 seconds in telemetry signal detection.
- **"HR BELT NEEDED" -** No telemetry belt signal has been sensed during the initial setup time.
- **"HOLD HR SENSORS" -** In contact heart rate signal situations this message will come every 30 seconds to prompt the user to hold the sensors.
- "**HR MODE DISABLED**" - No heart rate signal is allowed due to the set up option that was chosen. Heart rate monitoring is not possible.



THE FITNESS TEST PROGRAMS

Understanding Submaximal Exercise Testing

Before using the StairMaster® 4000 PT® for submaximal exercise testing, it should be noted that all submaximal fitness tests make several assumptions:

- That a steady-state heart rate is obtained for each exercise workload.
- That a linear relationship exists between heart rate, oxygen uptake and workload.
- That the maximal heart rate for a given age is uniform.
- That the mechanical efficiency of the physical activity performed (i.e., oxygen uptake at a given workload) is the same for everyone.

It should be kept in mind that any one or all of the above mentioned assumptions may not be met during a submaximal exercise test. If for any reason one of the assumptions is not met, then errors in predicting $VO_{2\ max}$ will occur.

Unfortunately, it is often quite difficult to meet all of the requirements for the four listed assumptions. For example, exercising at a given workload for only a few minutes can involve an insufficient amount of time for many individuals to achieve a true steady-state. To ensure that a steady-state has been achieved, the heart rate should be measured after two minutes of exercise at a given workload and again after the third minute of exercise at that workload. These two heart rates should then be compared. If a difference of more than five beats per minute between the two is found, the subject should continue to exercise at one-minute intervals at the same workload until two successive heart rates differ by less than five beats per minute.

It is also important that the submaximal heart rates obtained be between 115 and 150 beats per minute, because it is within this heart rate range that a linear relationship tends to exist between heart rate and oxygen uptake or workload for most adults. When the heart rate is less than 115, many external factors (e.g., talking, laughing, apprehension, etc.) can greatly influence heart rate. Once the heart rate reaches a level between 115 and

150, external factors no longer influence heart rate, and a linear relationship exists. As the heart rate rises above 150, the heart-rate/oxygen uptake relationship becomes curvilinear.

The third assumption involves maximal heart rate. Maximal heart rate is the greatest heart rate that can be measured when an individual is exercising to the point of volitional fatigue (i.e., exhaustion) during a graded exercise test. Several equations have been developed to estimate the average maximal heart rate for humans:

- Maximal heart rate = 220 minus age (low estimate)
- Maximal heart rate = 210 minus [0.5 x age] (high estimate)
- Maximal heart rate = 226 minus age (estimate for older individuals)

Maximal heart rate can, however, vary greatly among different individuals of the same age. One standard deviation is ±12 bpm, which means that two-thirds of the population varies an average of plus or minus 12 heart beats from the average given by a prediction equation. If an individual's age-predicted maximal heart rate is higher than that person's true maximal heart rate, then his/her estimated $VO_{2\ max}$ will be an overestimation of the correct or actual value.

The final assumption addresses the issue of mechanical efficiency. Oxygen uptake at any given work rate can vary by approximately 15% between different individuals. Therefore, individuals vary in the amount of oxygen they require to perform a certain exercise workload. Some individuals are more efficient at performing a given task than others. As a result, the average oxygen consumption associated with a given workload may vary significantly from one person to another. Thus, $VO_{2\ max}$ predicted by submaximal exercise tests tends to be overestimated for those who are mechanically efficient and underestimated for those who are inefficient.

The point to remember is that submaximal exercise testing, though not as precise as maximal exercise testing, is not without advantages. For example, the results of such testing can provide a fairly accurate reflection of an individual's fitness status without the cost, risk, effort (on the part of the subject) and time involved in max testing. If an individual is given repeated

submaximal exercise tests and that person's heart rate response to a fixed workload is found to decrease over time, it is reasonably safe to conclude that the individual has made improvements in aerobic (cardiorespiratory) fitness, irrespective of the accuracy of the $VO_{2\ max}$ prediction.

Pretest Screening

Prior to any exercise test (maximal or submaximal), participants should complete a brief health/medical questionnaire, have their resting blood pressure and heart rate measured, and provide an informed consent form. The Physical Activity Readiness Questionnaire (PAR-Q) is an example of a valid health/medical questionnaire for screening individuals prior to submaximal exercise testing. Canadian health and fitness practitioners have extensively (and quite successfully) used the PAR-Q to determine whether individuals should be given an exercise test. A "yes" answer to any of the following seven questions taken from the PAR-Q would disqualify a participant from taking part in an exercise test until appropriate medical clearance was obtained.

PHYSICAL ACTIVITY READINESS QUESTIONNAIRE (PAR-Q)

1. Has your doctor ever said you have a heart condition and recommended only medically supervised physical activity?
2. Do you have chest pain brought on by physical activity?
3. Have you developed chest pain within the past month?
4. Do you tend to lose consciousness or fall over as a result of dizziness?
5. Do you have a bone or joint problem that could be aggravated by the proposed physical activity?
6. Has a doctor ever recommended medication for your blood pressure or a heart condition?
7. Are you aware, through your own experience or a doctor's advice, of any other physical reason against your exercising without medical supervision?

The StairMaster Submaximal Fit Test

The StairMaster branching protocol is a series of 3-minute stages of continuous exercise at increasing intensity. The first stage is a warmup at approximately 4 METs. The intensity of the remaining stages is based on the heart rate response to the warmup. The test is designed to raise the steady-

state heart rate of the subject to 110 to 150 beats/min for two consecutive stages. It is important to remember that two consecutive heart rate measurements must be obtained in the 110 to 150 beats/min range to predict VO_{2max}. The test typically lasts from 9 to 15 minutes.

In the StairMaster protocol, each work rate is performed for 3 minutes, with heart rates recorded during the final 4 seconds of the 2nd and 3rd minutes of each stage. If the heart rates are within 5 beats/min, then the heart rate during the last minute is plotted against the work rate, and the program advances to the next 3-minute stage. The program continues for 2 to 4 stages until 2 steady state heart rates between 110 to 150 beats/min are obtained in 2 consecutive stages. The line generated from the plotted points is then extended to the age-predicted maximal heart rate. A corresponding maximal work rate and VO_{2max} can then be calculated.

At the end of the 3rd minute of each stage, if the heart rates at the end of the 2nd and 3rd minute are not within 5 beats/min of each other, then that work rate is maintained for an additional minute. At the end of the 4th minute, the heart rate is compared to the heart rate at the end of the 3rd minute. If the heart rates are within 5 beats/min, then the heart rate during the 4th minute is plotted against the work rate. If the heart rate at the end of the 3rd and 4th minute are not within 5 beats/min, then the work rate is maintained for one more additional minute. If the heart rate at the end of the 4th and 5th minutes are within 5 beats/min, then the heart rate at the end of the 5th minute is plotted against the work rate. If the heart rate at the end of the 4th and 5th minutes are not within 5 beats/min, then the test failed.

Once 2 consecutive heart rate measurements are obtained in the 110 to 150 beats/min range, then the test ends successfully and the results are displayed. The estimated maximum aerobic capacity is shown in ml/kg/min and METs. Next, the results are compared to normative values for others of the same age range and gender (see Table 2). Results are stored in the console until the next person starts an exercise program.

Figure 4: StairMaster® Fitness Protocol

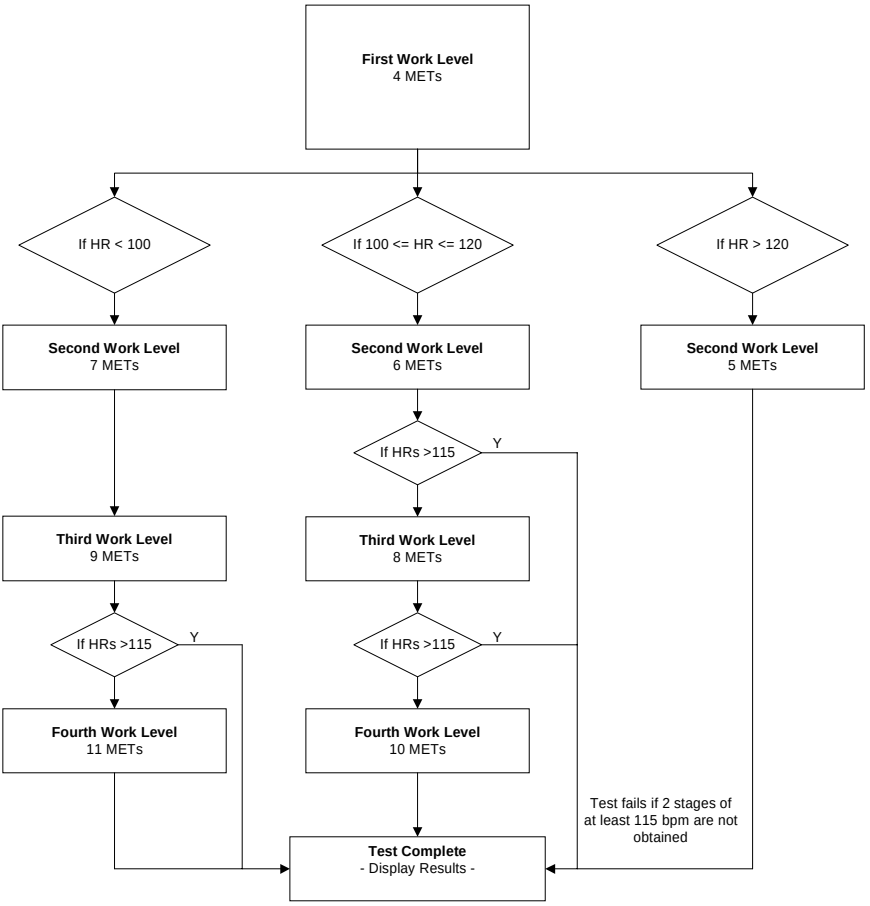


Table 2. Fitness Rating Norms (VO_{2max})

MEN					
Age	**High**	**Good**	**Average**	**Fair**	**Low**
20 – 29	>51	51 – 47	47 – 43	42 – 40	<39
30 – 39	>50	50 – 45	45 – 41	41 – 37	<37
40 – 49	>48	48 – 42	42 – 38	38 – 35	<35
50 – 59	>45	45 – 39	38 – 35	35 – 32	<32
60+	>43	42 – 35	35 – 32	32 – 29	<29
WOMEN					
Age	**High**	**Good**	**Average**	**Fair**	**Low**
20 – 29	>44	44 – 38	38 – 35	35 – 32	<32
30 – 39	>41	41 – 37	37 – 34	34 – 31	<30
40 – 49	>40	39 – 34	34 – 31	31 – 28	<28
50 – 59	>35	35 – 31	31 – 28	28 – 26	<25
60+	>35	35 – 39	29 – 26	26 – 24	<24

The Firefighter's Stair Climb Tests

The StairMaster® Stepmill® is routinely used to assess the aerobic fitness levels of fire fighters in full protective gear carrying heavy equipment. The Candidate's Physical Ability Test (CPAT), approved by the International Association of Fire Fighters (IAFF) and reviewed by the U.S. Justice Department, requires each candidate to step on the Stepmill at a predetermined stepping pace for a specific period of time. There are two fire fighter specific Stair Climb Test programs. The first test is the CPAT Stair Climb Test. The second test is a modified version of the CPAT test that is used by the New York City Fire Department (NYCFD). **Both tests can now be simulated on the StairMaster 4000 PT machines.**

- CPAT Stair Climb Test – (Fit Test #2) The first phase is a warmup interval at intensity of 56 steps/min and lasts 20 seconds. At the end of the first interval the time counter will reset to zero. The second phase continues through nine 20 second

intervals at an intensity of 68 steps/min. The CPAT Stair Climb Test has a total of 10 intervals and lasts for 3 minutes, 20 seconds (including warmup).

Turning on the CPAT Stair Climb Test

1. Press [Ù], [9], [1], [ENTER], on the console keypad. Make sure to press in the middle of each key and be aware that the corresponding numbers will not show in the console display.

2. The console will prompt you to "BEGIN FIT TEST." The test can be stopped at any time by pressing [STOP].

- NYCFD Stair Climb Test – (Fit Test #3) The first phase is a warm-up interval at an intensity of 56 steps/min and lasts 60 seconds, followed by a 60 second rest period (no stepping). At the end of the rest period the time counter will reset to zero. The second phase is at an intensity of 68 steps/min and lasts for 5 minutes, 12 seconds.

Turning on the NYCFD Stair Climb Test

1. Press [Ù], [9], [2], [ENTER], on the console keypad. Make sure to press in the middle of each key and be aware that the corresponding numbers will not show in the console display.

2. The console will prompt you to "BEGIN FIT TEST." The test can be stopped at any time by pressing [STOP].

CONSOLE CODES

There are three groups of console codes which are differentiated according to function. The first group of codes are customization codes and are used to set defaults such as units, language, heart rate input type, etc. The second group of codes are machine status codes and are used to track hours and other general usage patterns for maintenance purposes. The third group of codes are diagnostic codes and are used for troubleshooting. The following key actions are valid in each group of console codes:

- Pressing [LEVEL ∧], [1st #], [ENTER] displays what group of codes is being accessed.
- Pressing [SELECT] or [LEVEL ∧] at that point allows you to view all possible selections. Once in this mode pressing [LEVEL ∨] backs up through the selections; pressing [ENTER] then selects that item. If another test level is available at this point, the [SELECT] / [ENTER] process is repeated.
- Pressing [∧] [1st #, or 2nd #], [ENTER] selects that item directly.
- Pressing [CLEAR] exits any of the special access modes.

Custom Codes

[^] [3] [0]	change workout time limit between 5 to 99 minutes
[^] [3] [1]	change units (MPH or KMH)
[^] [3] [2]	choose type of heart rate input and priority (telemetry or contact)
[^] [3] [3]	- N/A -
[^] [3] [4]	choose console language
[^] [3] [5]	change contrast on console
[^] [3] [6]	- N/A -
[^] [3] [7]	- N/A -
[^] [3] [8]	- N/A -
[^] [3] [9]	reset to factory defaults

1. Change the workout time by pressing [LEVEL: ^], [3], [0]. The console will display “MAX TIME.” Press [ENTER]. The console will then display the current time limit. Use the keypad to enter the desired time, then press [ENTER]. For no time limit, press [0]. The console will display "TIME LIMIT OFF."

2. Change the units to either Metric or USA units by pressing [LEVEL: ^], [3], [1], [ENTER]. The console will display the current units - either "USA UNITS" or "METRIC UNITS." Use the [SELECT] key to change option, and then press [ENTER].

3. Choose the desired heart rate input preference by pressing [LEVEL: ^], [3], [2]. The console will then display "HR INPUTS." Press [ENTER]. The console will then display the current hear rate input selection. Press the [SELECT] key to scroll through the other options. Press [ENTER] after the desired option.

4. Change the language by pressing [LEVEL: ^], [3], [4]. The console will display "LANGUAGE." Press [ENTER]. The console will then display the current language. Press the [SELECT] key to scroll through the other options. Press [ENTER] to change the option.

5. Adjust the contrast on the LCD screen by pressing [LEVEL: ^], [3], [5]. The console will display "CONTRAST ADJ." Press [ENTER]. The console will then display the current contrast number. Press the [LEVEL: ^], and [LEVEL: v] keys to increase or decrease the contrast. The changed value will remain on exit.

6. Reset the console to factory defaults by pressing [LEVEL: ^], [3], [9]. The console will display "SET DEFAULTS ." Press [ENTER]. Then console will rest itself and then display "DONE."

Quick Scan Programming

You can quickly access any of the custom menus by pressing [LEVEL: ^], [3], [ENTER]. The console will then display "CUSTOMIZE." Scroll through the following options:

[SELECT]	" MAX TIME"	0
[SELECT]	"CHANGE UNITS"	1
[SELECT]	"HR INPUTS"	2
[SELECT]	"LANGUAGE"	4

[SELECT]	"CONTRAST ADJ"	5
[SELECT]	"MAX SPEED" **- N/A-**	6
[SELECT]	"CLINICAL MODE"-**N/A**-	7
[SELECT]	"SET DEFAULTS "	9

Machine Status Codes

[^][4][0] display machine run time in hours
[^][4][1] display number of workouts
[^][4][2] display distance traveled
[^][4][3] display software rev
[^][4][4] display machine type
[^][4][5] **-N/A-**
[^][4][6] display machine run time in hours since last cleared (used for maintenance)

1. Display the machine run time by pressing [LEVEL: ^], [4], [0]. The console will display "RUN HOURS XXXXX".

2. Display the number of workouts by pressing [LEVEL: ^], [4], [1]. The console will display "WORKOUTS XXXX."

3. Display the total distance covered up to date by pressing [LEVEL: ^], [4], [2]. The console will then display "DISTANCE XXXX."

4. Display the console software revision number by pressing [LEVEL: ^], [4], [3]. The console will display "CONS 92111-XXX."

5. Display the machine type by pressing [LEVEL: ^], [4], [4]. The console will display "STEPPER (or other machine type)."

6. Display the machine run time since last cleared by pressing [LEVEL: ^], [4], [6]. The console will display "MAINT HOURS XXXX."

Quick Scan Programming

You can quickly access any of the custom menus by pressing [LEVEL: ^], [4], [ENTER]. The console will then display "MACHINE STATUS." Scroll through the following options:

[SELECT]	" RUN HOURS XXXX"	0
[SELECT]	" WORKOUTS XXXX"	1
[SELECT]	" DISTANCE XXXX"	2
[SELECT]	" CONS 90211- XXX "	3
[SELECT]	" STEPPER"	4
[SELECT]	**-N/A-**	
[SELECT]	" MAINT HOURS xxxx"	6

Resetting the Maintenance Hour Counter

For ease of maintenance records, the 4000 PT console has a maintenance timer that will clock the number of hours, workouts, and time between last servicing. After each maintenance period reset the counter.

[^][7][1] Reset Service

1. Reset the maintenance hour counter by pressing [LEVEL: ^], [7], [1]. The console will dusplay "RESET SERVICE." Press [ENTER]. The console will display "DONE." Press [CLEAR] to return to the starting screen.

Configuration Code

The 4000 PT® console supports other StairMaster® exercise systems. It is important to verify that the machine configuration code matches the type of machine you have.

[^][8][0] Change Machine

1. Change the machine type by pressing [LEVEL: ^], [8], [0]. The console will display "CHANGE MACHINE." Press [ENTER]. The console will then display the current machine type. Use the [SELECT] key to toggle between options. Press [ENTER] for the desired option.

MAINTENANCE INSTRUCTIONS

HELPFUL HINTS

Read all maintenance instructions thoroughly before beginning work. In some cases, an assistant is required to perform the necessary tasks. All references to the right or left side and to the front or back are made as if you were on the machine ready to exercise.

TOOL LIST

The following tools are needed to perform service and maintenance:

- Torx screwdriver
- phillips screwdriver
- combination wrenches (sizes 7/16 - 3/4")
- wonder bar (included w/ unit)
- combination pliers
- locking pliers
- volt-ohm meter (multimeter)
- wire stripper/crimper tool
- allen wrench set (sizes 5/64 - 1/4")
- external snap ring pliers
- shop goggles or other eye protection
- torque wrench
- socket set or nut driver set (sizes 1/4 - 3/4" in 1/16" increments)

MAINTENANCE RECORDS

For ease of maintenance the 4400/4600 PT/CL console will keep track of hours, number of workouts, time between last servicing, etc. You can quickly access any of the custom menus by pressing [LEVEL: ^], [4], [ENTER]. The console will then display “MACHINE STATUS.” Scroll through the following options:

[SELECT]	“ RUN HOURS XXXX”*	0
[SELECT]	“ WORKOUTS XXXX”	1
[SELECT]	“ DISTANCE XXXX”	2
[SELECT]	“ CONS 90211- XXX ”	3
[SELECT]	“ STEPPER”	4
[SELECT]	**-N/A-**	
[SELECT]	“ MAINT HOURS xxxx”	6

*The machine may show a few hours of use due to testing at the manufacturing facility.

INITIAL SERVICE

Upon receiving your machine, use a soft, clean towel to wipe off the dust which may have accumulated during shipping. Your new machine will require minor assembly. Refer to the "Installation Instructions" section for details.

PREVENTIVE MAINTENANCE

Most of these preventive maintenance procedures can be performed after removing the mid-cover. The preventive maintenance schedule is summarized in Table 3. The schedule is based on normal usage in a commercial health club environment; adjust the schedule to meet actual machine usage. Refer to the "Parts Removal and Replacement" section for all disassembly and assembly instructions.

Cleaning

1. DO NOT USE GLASS CLEANERS OR ANY OTHER HOUSEHOLD CLEANERS ON THE CONSOLE. Clean the console daily with a water-dampened cloth and wipe dry after cleaning.

2. Clean the exterior of the machine daily using soap and water or a diluted household cleaner such as Fantastic®.

3. Thoroughly clean the entire machine, including the interior, at least once a week (see Table 3).

Inspecting

1. Inspect the frame for any rust, bubbling, or paint chips during the weekly cleaning. The salt in perspiration can damage the unpainted surfaces.

2. Inspect the Poly-V belt and HTD belts for excessive wear during the quarterly lubrication. Adjust the belt tension if necessary.

MAINTENANCE INSTRUCTIONS

Lubrication

There are nine components that need periodic lubrication: the drive chain, the step chains, the pedal arm return springs, the step chain connection points, the pedal arm bushings, the leveling arm bushings, the spring pulley shafts, the pedal shafts and the leveling arm pins. Remove the bottom cover to get to the components.

1. Place a protective mat on the floor while you lubricate your machine. A rubber floor mat is available from StairMaster® Health & Fitness Products, Inc.

2. Lubricate the drive chain and the step chains weekly. Try to penetrate the entire length of the chains with 30W motor oil.

3. Remove the drive chain and step chains every three months to thoroughly clean and lubricate them. Use a mild degreaser and a stiff brush to remove dirt and corrosion from the chains.

4. Unhook the pedal arm return springs from the spring hanger every week. To protect them from corrosion, wipe the entire length of each pedal arm return spring with a cloth dampened with 30W motor oil before reconnecting it. Replace the spring if it is rusty or otherwise damaged.

5. Remove the double pitch master link from the step chain connection points every three months. Clean the master link and the bushing in the pedal arm. Lubricate the master link and bushing with a thin coat of multi-purpose grease before reassembling.

6. Remove the pedal arms and leveling arms every three months. Clean the pedal arm and leveling arm shafts and bushings with a clean cloth. Protect the shafts from corrosion by wiping them with a cloth dampened with 30W motor oil.

WARNING

TO REDUCE THE POSSIBILITY OF SLIPPING, BE SURE THE PEDAL AREA IS FREE OF GREASE OR OIL. WIPE ANY EXCESS OIL OFF THE MACHINE SURFACES.

7. Remove the spring pulleys every three months. Clean the spring pulley shafts with a dry cloth. Protect the shafts from corrosion with a thin coat of multi-purpose grease before reassembling.

8. Remove the pedals every three months. Clean the pedal shaft and leveling arm pin with a dry cloth. Protect the pedal shaft and leveling arm pin from corrosion with a light coat of multi-purpose grease before reassembling.

Table 3: Recommended Preventive Maintenance Schedule

PART	RECOMENDED ACTION	FREQUENCY	CLEANER	LUBRICANT
Console	Wipe Clean	Daily	Water	N/A
Covers	Clean and Inspect	Daily	Diluted household cleaner	N/A
Drive and Step Chains	Lubricate	Monthly or after 300 hours of use	N/A	30W motor oil
	Clean and lubricate	Quarterly or after 900 hours	Mild degreaser	30W motor oil
Step Chain Connection Points	Clean and lubricate	Every 3 months or after 900 hours	Clean, dry rag	Multi-purpose grease
Spring Pulley Shafts	Clean and lubricate	Every 3 months or after 900 hours	Clean, dry rag	Multi-purpose grease
Pedal Shafts and Leveling Arm Pins	Clean and lubricate	Every 3 months or after 900 hours	Clean, dry rag	Multi-purpose grease
Pedal Arm Springs	Inspect and wipe down	Each week or 70 hours	N/A	Clean, oil-dampened rag
Pedal Arm Shafts	Clean and lubricate	Every 3 months or after 900 hours	Clean, dry rag	30W motor oil
Battery	Check Voltage	Every 3 months or after 900 hours	N/A	N/A
Belts	Inspect & Adjust Tension	Every 3 months or after 900 hours	N/A	N/A

Note: Use of lubricants other than those specified will result in diminished performance and a shorter life span for that part.

GENERAL TROUBLESHOOTING GUIDELINES

This troubleshooting section is organized into three basic problem sections: electrical troubleshooting, console diagnostic tests, and mechanical troubleshooting. Once you have identified the problem section, perform all the tests in the same order as written. To order a replacement part or for help with troubleshooting, contact our Customer Service Department. Refer to the Appendix for the appropriate phone number.

ELECTRICAL TROUBLESHOOTING

The 4000 PT® electrical system has four major components: the alternator, the power supply, the power cables, and the console. The console and power supply are not serviceable by the owner. If any of these parts are inoperable, they must be replaced. Opening the console or the power supply will void the warranty.

1. Use a voltmeter set on VAC to verify that the AC wall outlet has 100 to 120 VAC (or 220 to 240 VAC, if applicable). If you do not have a voltmeter plug in an alternate AC-powered device (e.g., a lamp). If the device does not work when plugged into the electrical outlet, consult an electrician for further assistance and then retest the electrical outlet.

2. Plug the power supply into the wall outlet. The green Light Emitting Diode (LED) on the power supply should be on. If the LED does not light up, replace the power supply.

3. Disconnect the DC cable from the left side panel. Set the voltmeter to VDC and test for 12 to 19 VDC in pins #1 (+) and #2 (-). Replace the power supply if the voltage reading is outside the specified range.

4. Remove the bottom cover and connect the DC cable to the power connector on the left side of the frame. Locate the black and white wires on the backside of the power connector.

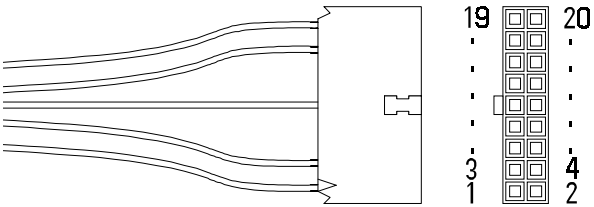
5. Follow the white power connector wire to the where it plugs into the main cable white wire, and disconnect it from the main cable white wire.

6. Set your voltmeter to VDC. Connect the positive lead of your voltmeter to the white wire from the power connector and touch the gray casing of the alternator with the negative lead of your voltmeter.

7. DC voltage measured should be 12 to 19 VDC. Replace the power connector if the voltage is not the same value as in step 3. Connect the two white wires.

8. Remove the console knobs from the back of the console, lift the console up, and disconnect the 20-pin main cable from the console.

9. Test for 12 to 19 VDC in pins #1 (-) and #10 (+) in the main cable connector. Replace the main cable if the voltage reading is not the same as in step 7.



10. If all voltage readings have been within the specified range and the console will not power up, the console should be replaced.

Alternator Test

11. Check for loose wiring connections on the alternator, diode, and load resistor.

12. Perform the Positive Output to Field test on the alternator:

- Disconnect the power cord from the electrical outlet.
- Remove the black wire from the B+ terminal on the alternator.
- Remove the brown wire from the field terminal on the alternator.

- Place a short wire with alligator clips on the B+ terminal and the field (FLD) terminal of the alternator.
- Step on the machine for approximately 10 to 15 seconds.
- If full resistance is achieved during this time, your alternator has correct current flow. If no resistance is achieved, replace the alternator.

Diode Test

13. Remove the brown wire and diode from the field terminal of the alternator and set your voltmeter to the Ohms setting.

14. Place one lead from the voltmeter on each end of the diode, and then reverse the leads. A diode that is good will show a high reading in one direction and a low reading when the leads are reversed. Replace the diode if the readings recorded are both high or both low.

Resistor Test

15. Remove one wire from the load resistor (see Final Assembly Figure) and place one lead from the voltmeter on each of the threaded posts on the load resistor. Replace the load resistor if the voltmeter does not read 0.5 Ohms (± 10%).

16. If the problem still exists, contact the Customer Service Department at 800-331-3578.

CONSOLE DIAGNOSTIC TESTS

The following tests are performed while the console is in the "SELECT WORKOUT" mode. If the console fails any test, the console should be replaced or exchanged. To return to the "SELECT WORKOUT" mode, press either [CLEAR] or [STOP] while in the DIAGNOSTIC mode. Please note that there may be additional verbiage on the display other than is listed in this manual. The 4000 PT® console is used on other StairMaster® equipment.

DIAGNOSTIC CODES

[^][6][0] Test display
[^][6][1] Test keyboard
[^][6][2] Test serial port
[^][6][3] Test alternator
[^][6][4] **-N/A-**
[^][6][5] **-N/A-**
[^][6][6] Test Tach
[^][6][7] **-** [6][9] **-N/A-**

Display Test

During the display test, the console screen alternates between all LCD segments turned on and the sample program profile screen at a 2-second rate.

1. Press [LEVEL: ^], [6], [0], [ENTER]. The console will display "DISPLAY TEST".

2. All LCD segments will turn on for 2 seconds, and then a sample program profile will be displayed for 2 seconds. Press [CLEAR] to end the test.

Keypad Test

Perform this test if you are having trouble entering data into the console. During the test, pressing any key displays that key name on the message line. Press [CLEAR] to exit.

1. Press [LEVEL: ^], [6], [1], to start the test.

2. Firmly press each button except [CLEAR]. The name of the key will be shown in the display window. Press [CLEAR] to end the test.

Serial Port Test

This test verifies that the RS 232 port used for linking to external C.S.A.F.E. systems (commercial entertainment systems) is working. You must have the loop-back cable assembly (PN 040051-001) to perform this test.

1. Insert the loop-back cable assembly into the RS 232 port on the back of the console.

2. Press [LEVEL: ^], [6], [2]. The console will display “SERIAL TESTS.” Press [ENTER] to access the C.S.A.F.E. test.

3. Press [ENTER] a second time. The console will run a diagnostic test and then display either “PASS” or “FAIL.” Replace the console if it fails this test.

Alternator Test

Use this test to verify the alternator field routines of the console. You will need to briefly exercise on the machine for this test.

1. Press [LEVEL: ^], [6], [3], to start the test.

2. For “Field on” press [LEVEL: ^]. Step on the machine for approximately 10 to 15 seconds. If full resistance is achieved during this time, your console has correct current flow. If no resistance is achieved, either the console or the alternator is bad. See the electrical troubleshooting portion of this manual to isolate and test the alternator. Replace the console if the alternator is good.

3. For ‘Field off” press [LEVEL: V]. Step on the machine for approximately 10 to 15 seconds. You should not get resistance with the field turned off. Press [CLEAR] to end the test.

CONSOLE DIAGNOSTIC TESTS

Tach Test

If you do not have resistance, perform the tach test. The tach test will tell you the tach signal, in revolutions per minute (RPMs), picked up by the console.

1. Press [LEVEL: ^], [6], [6], [ENTER]. The console will display "TAR TACH ACT." The target tach speed of 2,000 RPMs will be shown in the upper left corner of the display window. The actual tach picked up by the console will be shown in the upper right corner of the display window.

2. Start stepping on the pedals. The number in the right hand corner of the console should increase to 2,000 RPMs (+/- 200). If the tach signal picked up by the console is less then 1,900 RPMs then there is a problem in the AC tach circuit - either with the console software, alternator (check the AC tach wire, the field wire, the diode, and the terminal posts), or the main cable.

Error Reporting

The console will display various error messages in the display window. The total amount of errors will be displayed in the upper right numeric window. Note that only the highest priority reported error will be displayed. Errors are handled in two ways. One as a non-fatal "WARNING" which will display the text message but continue system operation until the user presses the [CLEAR] key. The second way is as a fatal "ERROR" which will stop the exercise and return the system to an idle intensity state. The console will display the error text and not let the user restart the programs unless power has been turned off and then back on.

The following microprocessor errors require a console replacement; ALU ERROR, TIMER ERROR, and STATIC RAM ERROR.

Resetting the power may clear the following microprocessor errors; EEPROM ERROR, and PROGRAM ERROR. If resetting the power doesn't work, the console may need to be replaced.

The Telemetry (Polar®) Heart Rate Test

The telemetry heart rate system is made up of the console, the heart rate receiver, and the chest strap (available separately). You can test each component by performing the following steps:

1. You will need to put a chest strap on in order to test the telemetry heart rate. Before you put on the chest strap, wet the two contact patches. Secure the chest strap as high under your pectoral muscles (chest) as is comfortable. The chest strap should fit snugly, comfortably, and allow normal breathing.

2. A flashing ♥ should be displayed on the console. Your heart rate, in beats per minute, will show next to the heart icon. If the heart icon does not show, or if your heart rate is not displayed on the console then you have a problem with either the console, chest strap, or heart rate receiver.

3. Verify that the console software has been set up to receive telemetry (see the heart rate monitoring section of this manual). Note that holding the contact heart rate sensors (if enabled) can inhibit the telemetry heart rate input from working.

4. Test your chest strap with a machine that you know is working, or with a heart rate watch that you know is working.

5. If possible, replace or exchange your console with a machine that you know is working and retest the machine.

6. Excess false heart rate detection: the telemetry receiver located in the console is susceptible to mechanical vibration as well as external electrical interference. Hitting the console or the frame may momentarily cause errant heart beat detection - this is normal. If excessive false heart beats appear only during workouts, check that the console cable is not curled up behind the console. Pull as much of the cable down and away from the console as possible. False heart beats while the machine is idle are most likely due to external interference. Try plugging the machine into a different outlet, or moving it to a new location.

MECHANICAL TROUBLESHOOTING

If you hear a grinding or clicking noise, experience excessive vibration during exercise, or if the pedals are not functioning properly, you probably have a problem in the drive train. Attempt to isolate the problem area by performing the following tests in precisely the order listed below.

1. Unplug the machine and remove the bottom side covers.

WARNING

TO REDUCE THE RISK OF INJURY, DO NOT OPERATE THE MACHINE WHILE THE COVERS ARE REMOVED. DO NOT DEPRESS OR RAISE THE PEDALS WHILE ANYONE'S HANDS ARE INSIDE THE MACHINE.

2. Noise can be generated by a Poly-V belt that is either too tight or too loose. Check the condition and the tension of the belt. Replace a worn belts. Adjust the belt tension according to the instructions in the "Parts Removal and Replacement" section.

3. Remove the Poly-V belt and move the pedal arms. If the noise no longer exists, check the condition of the alternator. If the noise is still present, go to step #4. Do not reinstall the Poly-V belt if performing step #4.

    - Disconnect the DC power cable. Spin the alternator pulley with your fingers. It should spin freely and remain spinning for at least two revolutions. If it does not, the alternator should be replaced.

    - If the alternator does spin freely, check the alternator for noise, roughness, or the presence of an excessive amount of black powder inside the alternator or near the outside of the case. If any of these conditions exist, the brushes might be bad. Replacement brushes are available as well as replacement alternators.

4. Tighten the transmission pulley set screw onto the flat side of the transmission output shaft. Tighten the transmission drive sprocket set screw to the keyway in the transmission input shaft.

5. Remove the drive and step chains. Check the condition of the chains by flexing each link up and down. Each link should move freely. Replace the chain if any stiff or inflexible links are found or if the chain is rusty, corroded, or otherwise damaged. Do not reinstall the chains.

6. Spin the transmission drive sprocket input 1 complete revolution. The transmission pulley output should turn 19 revolutions. Replace the transmission if any clicking or grinding noises are heard during rotation or the drive ratio is not 19 to 1.

7. Check the pedal arm and leveling arm shafts by removing both the right and left pedal and leveling arms. Inspect the shafts and the bushings for signs of wear and corrosion. Replace the bushing(s) if worn.

8. Remove the pedals. Clean any corrosion off the pedal shaft with an oil-dampened rag. Apply a thin coat of multi-purpose grease to the shaft. If the noise persists, go to step 10. Check the step chain connec tion point. Clean and grease the master link and bushing. Replace damaged parts.

9. Check the drive hub assembly.

   - Check the condition of the drive sprocket teeth. The teeth should not be unevenly worn. Replace the worn sprocket(s).

   - The drive sprockets work independently of one another. Each sprocket should turn freely in one direction and lock when turned in the other direction. Replace an inoperable drive sprocket.

   - Remove the drive shaft. Inspect the bearings in the drive hub. Replace the drive hub assembly if the shaft does not spin freely or if there is excessive radial play at the shaft. Be careful not to get dirt into the hub.

   - Inspect the ends of the drive shaft (at the sprocket attachment points) for signs of wear or scoring. Replace the shaft if it is excessively worn.

PARTS REMOVAL AND REPLACEMENT

ALTERNATOR

1. Remove the side panels.

2. Mark the location of each wire attached to the alternator then remove the wires from the alternator (See figure 7).

3. Remove the alternator adjusting bolt on the slotted brace.

4. Remove the Poly-V belt and inspect the belt for wear. Replace the belt if it is cracked, cut, or is otherwise damaged.

5. Support the alternator while removing the nyloc nut and the alterna tor mounting bolt from the frame.

6. Remove the alternator from the frame.

7. Reverse the removal procedures to install the new alternator.

8. Verify that the alternator is wired correctly (See figure 7) and that the Poly-V belt deflection is set to allow 1/4" (0.6 cm) of belt deflection before applying power to the machine (see Figure 8**).**

ALTERNATOR BELT

⚠ WARNING

THE BELTS MUST BE PROPERLY TENSIONED. A BELT THAT IS TOO TIGHT WILL CAUSE SLOW AND SLUGGISH OPERATION. A BELT THAT IS TOO LOOSE WILL CAUSE EXCESSIVE NOISE AND BELT WEAR.

1. Remove the side covers.

2. Loosen the alternator adjustment screw that mounts the alternator brace to the alternator, and the pivot adjusting bolt that mounts the alternator to the frame.

3. Pivot the alternator down and remove the Poly-V belt.

4. Make sure the Poly-V belt is centered on the pulleys during installation.

5. Pivot the alternator up or down as necessary to allow 1/4" (0.6 cm) of belt deflection with fingertip pressure at the midpoint between the two pulleys (See figure 8).

6. Tighten the alternator adjustment bolt and the pivot adjustment bolt. Verify 1/4" (0.6 cm) deflection in the belt.

7. Reinstall the covers.

CONSOLE

1. Remove the four mounting knobs from the back of the console.

2. Disconnect the main cable from the back of the console.

3. Remove the console.

4. Reverse the steps to reinstall the console.

COVERS

Each side cover is secured to the mainframe of the machine with three quarter turn fasteners: two fasteners in the top of the side panel and one in the lower portion of the panel near the floor.

1. Disconnect the power supply from the right side panel.

2. Use a phillips screwdriver to remove the lower fastener by turning it counter clockwise one quarter of a full turn.

3. The fastener will remain attached to the panel when the screw driver is removed.

4. Support the panel while removing the two top fasteners the same way the single lower fastener was removed.

WARNING

TO REDUCE THE RISK OF INJURY, DO NOT OPERATE THE MACHINE WHILE THE COVERS ARE REMOVED. DO NOT DEPRESS OR RAISE THE PEDALS WHILE ANYONE'S HANDS ARE INSIDE THE MACHINE.

5. Carefully lower the side panel to the floor and unplug the internal power connector (right side only).

6. Once all three fasteners have been removed and the internal power connector has been disconnected (right side only) you may remove the panel from the machine

DRIVE CHAIN

1. Remove the bottom cover.

2. Remove the master link from the drive chain.

3. Remove the drive chain from the sprockets.

4. Reinstall the drive chain, ensuring the master link is properly installed.

5. Check the drive chain tension. There should be a total of 1" to 1-1/2" (2.5 to 4.0 cm) of play, up and down, at the slackest point in the chain. If the drive chain tension needs adjustment, refer to the “Drive Hub Assembly” section.

WARNING

IF THE DRIVE CHAIN IS TOO TIGHT, THE DRIVE TRAIN WILL WEAR EXCESSIVELY, SHORTENING THE LIFE OF THE DRIVE HUB. IF THE CHAIN IS TOO LOOSE, THE MACHINE WILL BE NOISY AND WILL OPERATE AT LESS THAN PEAK EFFICIENCY.

6. Lubricate the chain with 30W motor oil and wipe off the excess.

7. Reinstall the covers.

DRIVE HUB ASSEMBLY

1. Remove the side covers.

2. Remove the step chain retainers.

3. Support the pedal arm. Unhook the pedal arm return spring from the spring hanger. Lift the step chain up and off the clutch sprocket and lower the pedal arm to the floor. Repeat on the other side.

4. Remove the snap ring from the left end of the drive shaft (see Figure 9).

⚠ WARNING

TO REDUCE THE RISK OF EYE INJURY, WEAR EYE PROTECTION WHEN REMOVING SNAP RINGS.

5. Remove the drive chain.

6. Remove the sprocket and the other small parts from the left side of the hub assembly (see Figure 9).

7. Slide the drive shaft to the right, out of the hub assembly. If you remove the right-hand clutch sprocket from the drive shaft, do not confuse it with the left-hand clutch sprocket.

8. Loosen and remove the two remaining bolts and nuts that hold the hub assembly to the frame. Remove the hub assembly.

9. Inspect the drive shaft, bushings, thrust washers, and clutch sprock ets for excessive wear or pitting. Replace any worn components.

10. To reinstall the hub assembly, carefully reverse the disassembly procedures. Be sure that the right- and left-hand clutch sprockets are positioned correctly; the wide shoulder of the sprocket should be facing away from the hub on both sides.

11. Chain Tension. The drive shaft is mounted in an eccentric hub (see Figure 10). Rotate the hub so the marked hole is in the 12 o'clock position, lining up four holes in the hub with the four holes in the frame. Use this hub position when reinstalling the drive chain since the distance between the drive and transmission shafts is at a minimum. The hub is in the proper position when the drive chain has a total of 1" to 1-1/2" (2.5 to 4.0 cm) of play at the slackest point. As the drive chain stretches with use, increase the chain tension (and the distance between the two shafts) by rotating the hub counterclock wise. The distance between the two shafts is greatest when the marked hole in the hub is at the 8 o'clock position.

12. Reinstall the covers.

HANDGRIPS

1. Order the field installable handgrip kit from your local representative and follow the instructions included with the kit.

HANDLEBAR

1. Unscrew the main cable connector from the receptacle on the back of the console.

2. Unscrew the four console mounting screws and remove the console from the machine.

3. Lift the rear tube of the frame. Tip the machine forward so it is resting on the front portion of the frame.

4. Remove the two bolts that hold the handrail to the frame tube.

5. Stand the machine upright and remove the four bolts that secure the handrail to the mainframe near the console mount.

6. Remove the handrail from the frame.

7. Reverse the removal procedures to reinstall the handrail.

LEVELING ARM

1. Remove the pedal.

2. Remove the side covers.

3. Remove the snap ring that secures the leveling arm to the leveling arm shaft.

WARNING

TO REDUCE THE RISK OF EYE INJURY, WEAR EYE PROTECTION WHEN REMOVING SNAP RINGS.

4. Slide or gently tap the leveling arm off the shaft.

5. Clean the shaft and the pin with a cloth dampened with 30W motor oil before reassembly. DO NOT SAND THE SHAFT.

6. Reverse the removal procedures to reinstall the leveling arm.

PEDAL

1. Remove the snap ring and flat washer from the leveling arm pin and the pedal shaft.

WARNING

TO REDUCE THE RISK OF EYE INJURY, WEAR EYE PROTECTION WHEN REMOVING SNAP RINGS.

2. Slide the pedal off the pedal shaft and leveling arm pin.

3. Clean the pedal shaft and leveling arm pin with a dry cloth. Lubricate the pedal shaft and the pin with a thin coat of multipurpose grease.

4. Reverse the removal procedures to reinstall the pedal.

PEDAL ARM

1. Remove the pedal.

2. Remove the side covers.

3. Remove the step chain retainers.

4. Support the pedal arm. Unhook the pedal arm return spring from the spring hanger. Lift the step chain up and off the clutch sprocket and lower the pedal arm to the floor.

5. Remove the master link from the step chain connection point (see Figure 11).

6. Remove the snap ring from the pedal arm shaft.

⚠ WARNING

TO REDUCE THE RISK OF EYE INJURY, WEAR EYE PROTECTION WHEN REMOVING SNAP RINGS.

7. Slide or gently tap the pedal arm off the mounting shaft.

8. Clean the pedal arm shaft with a cloth dampened with 30W motor oil before reassembly. DO NOT SAND THE SHAFT.

9. Reverse the removal procedures to reinstall the pedal arm.

PEDAL ARM RETURN SPRING

1. Remove the bottom cover.

2. Unhook the pedal arm return spring from the spring hanger.

3. Detach the spring from the step chain by removing the master link (see Figure 11). The spring-chain connector is in good condition if it has an hour glass shape. Replace a worn spring-chain connector.

4. Check to ensure that the spring pulley turns freely and is not worn excessively. Refer to the "Spring Pulley" section if you have to replace the pulley.

5. To reinstall the spring, connect it to the end of the step chain using the master link.

6. Route the spring under the spring pulley.

7. Hook the end of the pedal arm return spring onto the spring hanger.

WARNING

DO NOT TWIST THE SPRING DURING INSTALLATION. IT WILL WEAR EXCESSIVELY AND REDUCE THE LIFE OF THE SPRING.

8. Reinstall the covers.

SPRING PULLEY

1. Remove the bottom cover.

2. Unhook the pedal arm return spring from the spring hanger.

3. Remove the snap ring from the pulley shaft.

WARNING

TO REDUCE THE RISK OF EYE INJURY, WEAR EYE PROTECTION WHEN REMOVING SNAP RINGS.

4. Slide the pulley and washer off the shaft.

5. Before reinstalling the pulley, clean the pulley shaft thoroughly with a clean, dry cloth. Apply a thin coat of multipurpose grease to the pulley shaft.

6. Slide the pulley and washer onto the shaft. Install the snap ring.

7. Route the spring under the spring pulley.

8. Hook the end of the spring over the spring hanger.

WARNING

DO NOT TWIST THE SPRING DURING INSTALLATION. IT WILL WEAR EXCESSIVELY AND REDUCE THE LIFE OF THE SPRING.

9. Reinstall the cover.

STEP CHAIN

1. Remove the side covers.

2. Remove the step chain retainers.

3. Support the pedal arm. Unhook the pedal arm return spring from the spring hanger. Lift the step chain up and off the clutch sprocket and lower the pedal arm to the floor.

4. Remove the double-pitch master link and bearing sleeve assembly from the step chain connection point on the pedal arm (see Figure 9).

5. Remove the master link from the spring-chain connection.

6. Reverse the procedures to reinstall the step chain. Lubricate the step chain before reinstalling the covers.

STEP CHAIN RETAINER

1. Remove the side covers.

2. Loosen and remove the two step chain retainer bolts. These bolts are also the top two mounting bolts for the drive hub assembly.

3. Reverse the removal procedures to install. Make sure there is adequate clearance between the step chain and the retainer.

TRANSMISSON

1. Remove the side covers

2. Remove the Poly-V belt.

3. Remove the drive chain.

4. Remove the two screws located on the transmission bracket.

5. Support the transmisson while removing the four mounting screws from the back side of the transmisson.

6. Installation is the reverse of removal.

GROUNDING INSTRUCTIONS

The machine must be grounded if you are using the external power supply or the battery charger. Grounding provides the path of least resistance for the electric current, thereby reducing the risk of electric shock. The power supply or battery charger must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

⚠ DANGER

IMPROPER CONNECTION OF THE EQUIPMENT-GROUNDING CONNECTOR CAN RESULT IN THE RISK OF ELECTRIC SHOCK. CHECK WITH A QUALIFIED ELECTRICIAN OR SERVICE PERSON IF YOU ARE IN DOUBT AS TO WHETHER THE MACHINE IS PROPERLY GROUNDED. DO NOT MODIFY THE PLUG PROVIDED WITH THIS MACHINE. IF IT WILL NOT FIT THE AVAILABLE OUTLET, HAVE A PROPER OUTLET INSTALLED BY A QUALIFIED ELECTRICIAN.

The grounding plug on the power supply and the battery charger is shown in sketch A below*. A temporary adapter, shown in sketches B and C, may be used to connect the plug to a two-pole receptacle if a properly grounded outlet is not available. The adapter should be used only until a properly grounded outlet (sketch A) can be installed by a qualified electrician. The tab extending from the adapter must be connected to a permanent ground such as the metal screw on the outlet cover.

* This may vary for International power supplies.

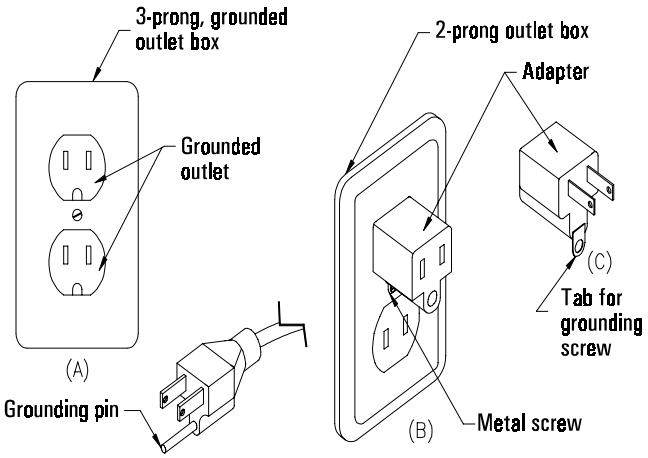


Figure 5: Grounding System

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

CHANGES OR MODIFICATIONS TO EQUIPMENT NOT EXPRESSLY APPROVED BY STAIRMASTER® HEALTH & FITNESS PRODUCTS, INC. COULD VOID THE USER'S AUTHORITY TO OPERATE THIS EQUIPMENT.

CANADIAN DOC CLASS B COMPLIANCE

This digital apparatus does not exceed the Class B limits for radio emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

La présent appareil numérique ne dépasse pas les limites etablies pour les bruits radioélectriques applicables aux appareils numériques de la Class B prescrites dans les règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

IMPORTANT PHONE NUMBERS

If you need assistance, please have both the serial number of your machine and the date of purchase available when you contact the appropriate StairMaster® Health & Fitness Products, Inc. office listed below.

OFFICES IN THE UNITED STATES

CORPORATE HEADQUARTERS
12421 Willows Road NE, Suite 100
Kirkland, WA 98034
(800) 635-2936 or (425) 823-1825
FAX: (425) 823-9490
www.stairmaster.com

CUSTOMER SERVICE
12421 Willows Road NE, Suite 100
Kirkland, WA 98034
(800) 331-3578
FAX: (425) 814-0601
E-mail: customerservice@stairmaster.com

INTERNATIONAL OFFICES AND DISTRIBUTORS

For technical assistance and a list of distributors in your area, please call or fax one of the following numbers.

INTERNATIONAL DIVISION
(425) 823-1825
FAX: (425) 820-7505
E-Mail: intlservice@stairmaster.com

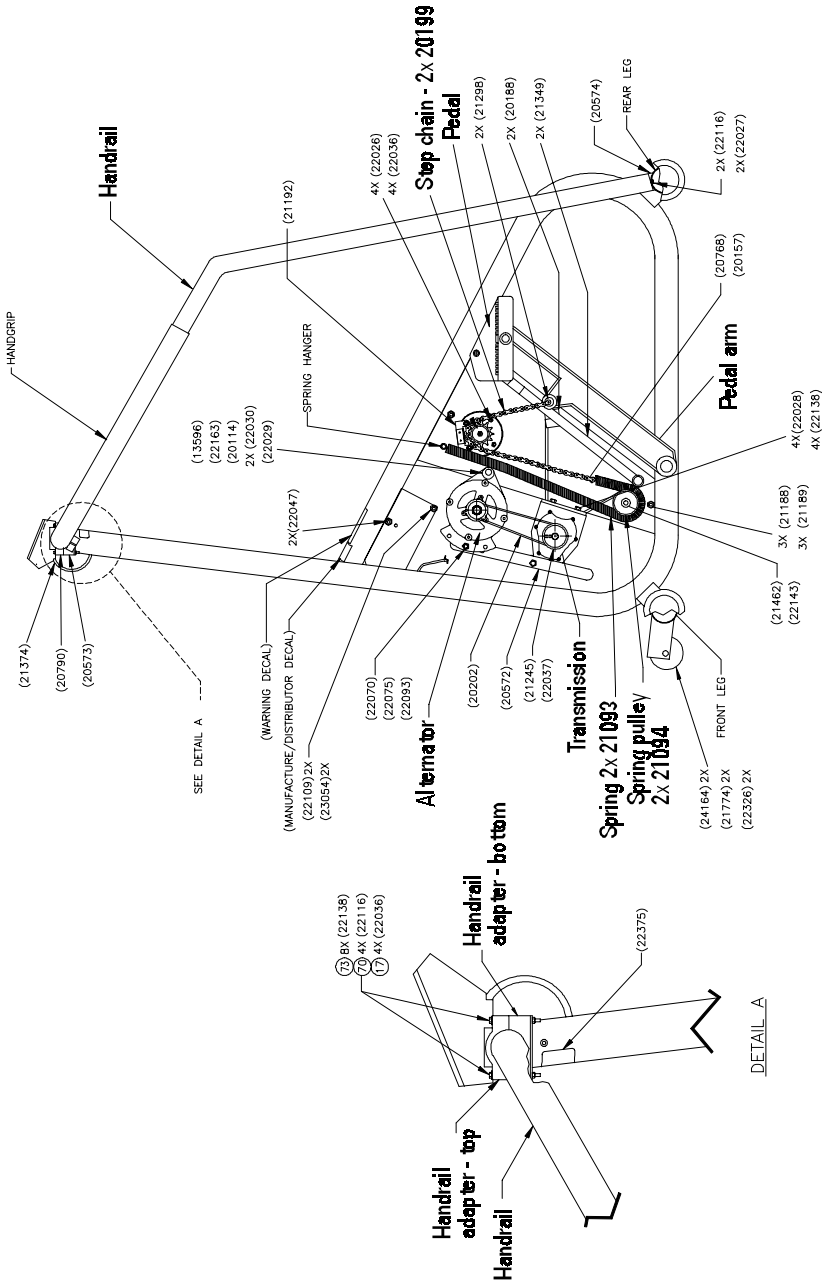
ASIA PACIFIC HEADQUARTERS
Telephone/Fax:+81-45-590-5686
E-mail: stairintl@aol.com

EUROPE: HEADQUARTERS
+41-91-827-3801
FAX: +41-91-827-8902
E-Mail: stairmasterch@swissonline.ch

GERMANY: HEADQUARTERS
+49-2204/610-27
FAX: +49-2204/628-90
E-Mail: stairmaster.de@t-online.de

U.K.: HEADQUARTERS
+44-1908/267-345
FAX: 44-1908/267-346
E-mail: stairmasteruk@msn.com

Figure 6: Final Assembly, Left Side



FIGURES

Figure 7: Final Assembly, Right Side

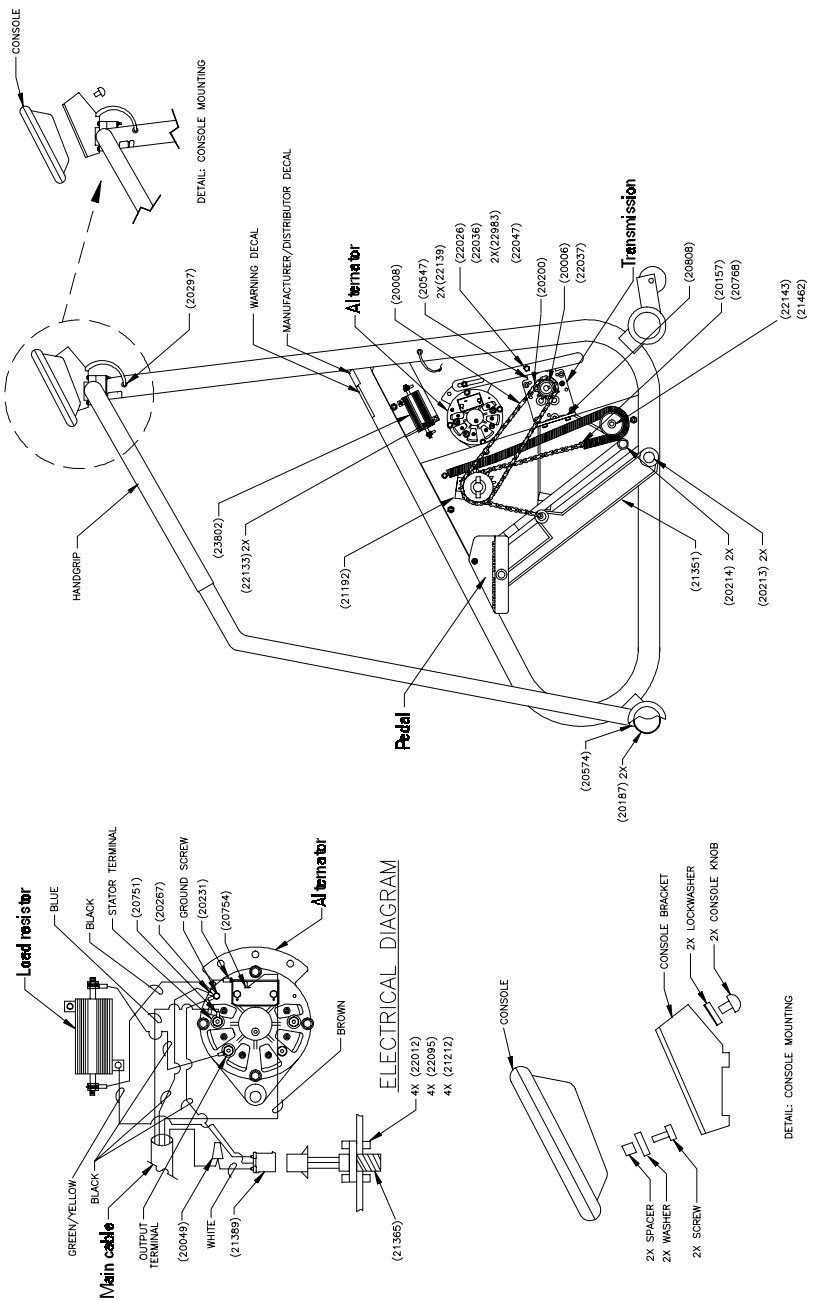


Figure 8: Belt Tension

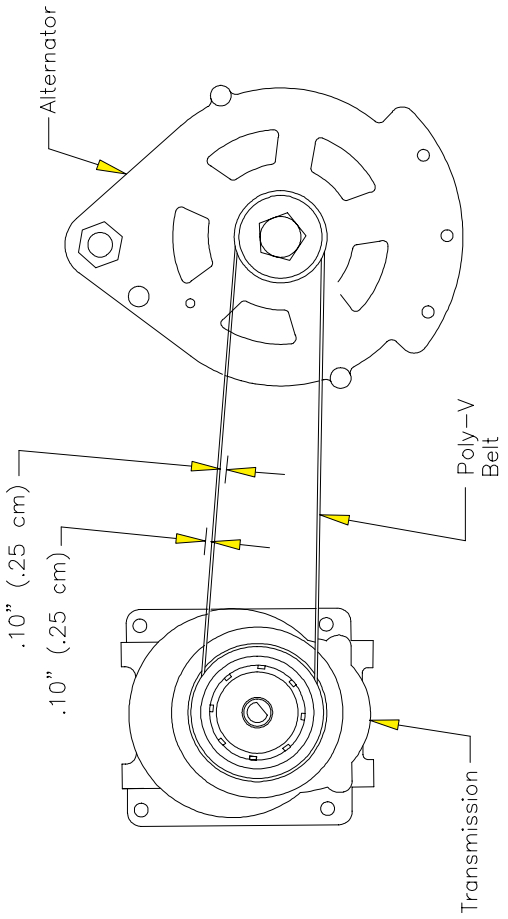


Figure 9: Drive Hub Assembly

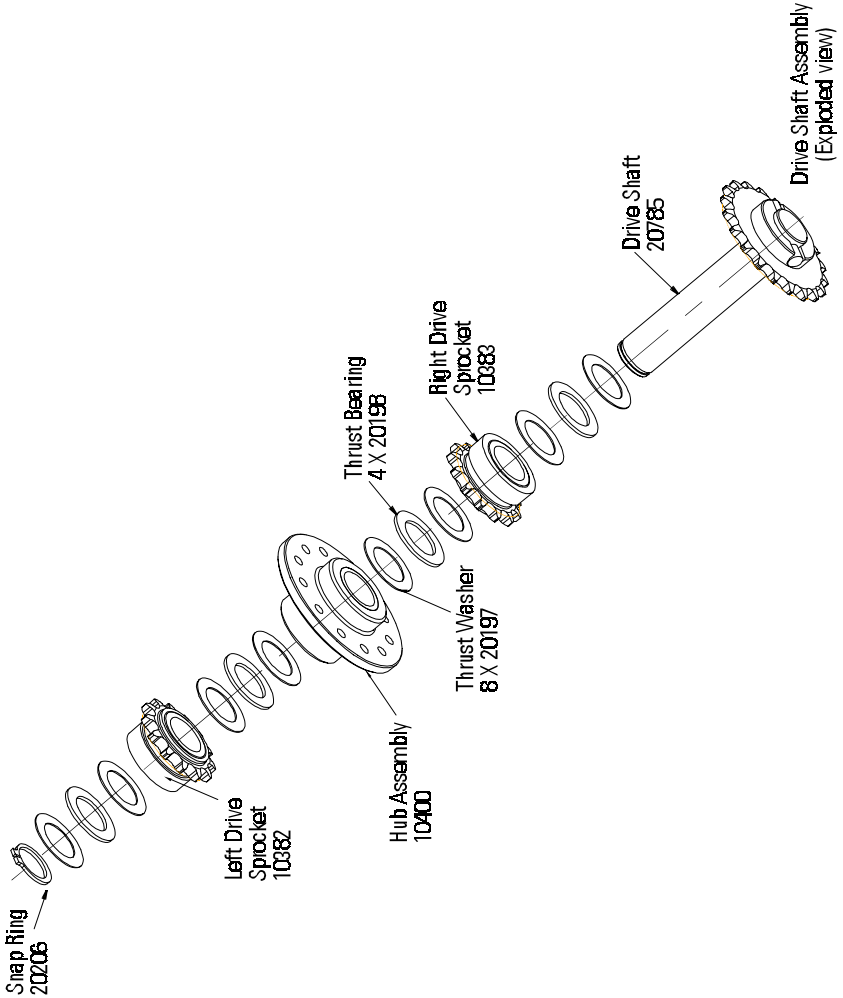


Figure 10: Drive Chain Tensioning

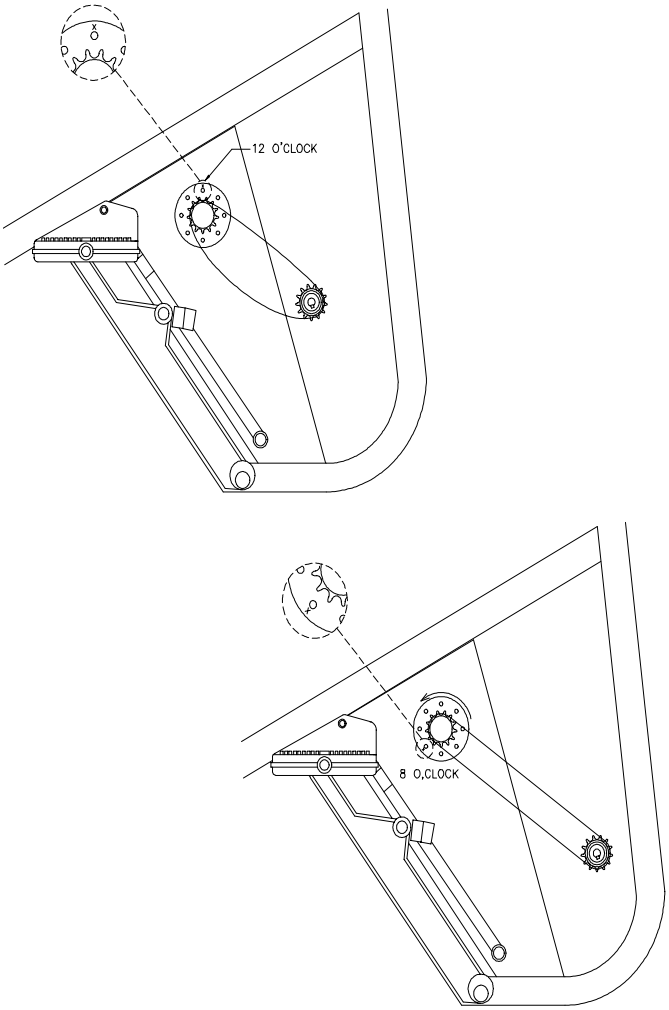


Figure 11: Left Pedal Arm Assembly

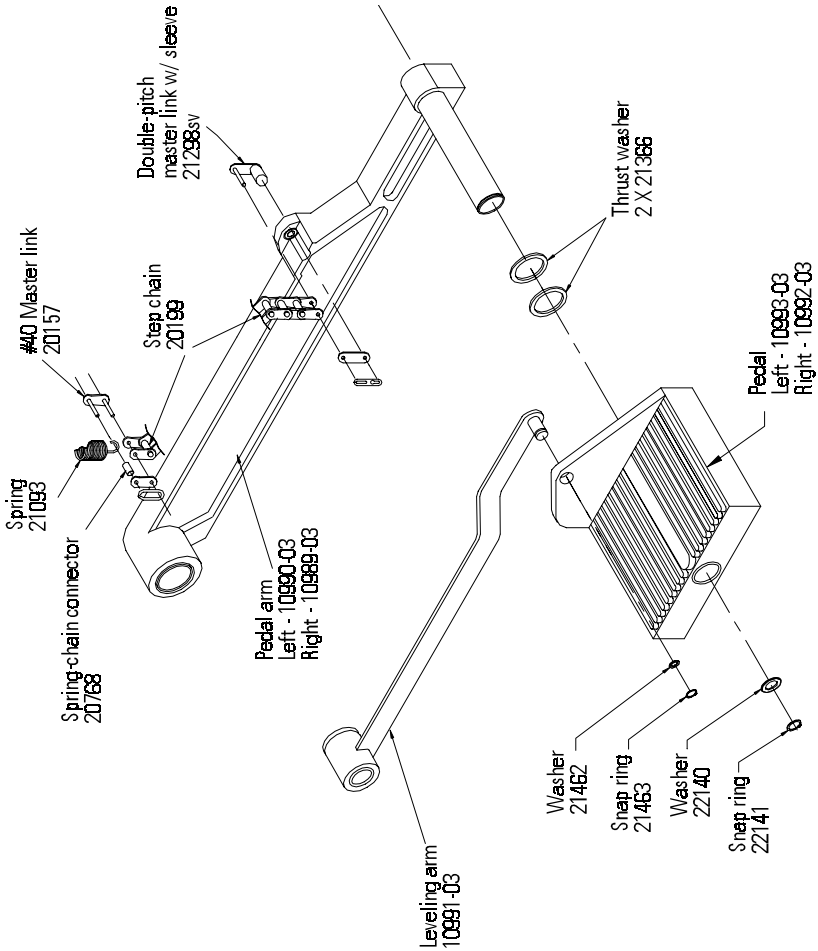


Figure 12: Transmission